

NOV 19 1935

The Dock & Harbour Authority

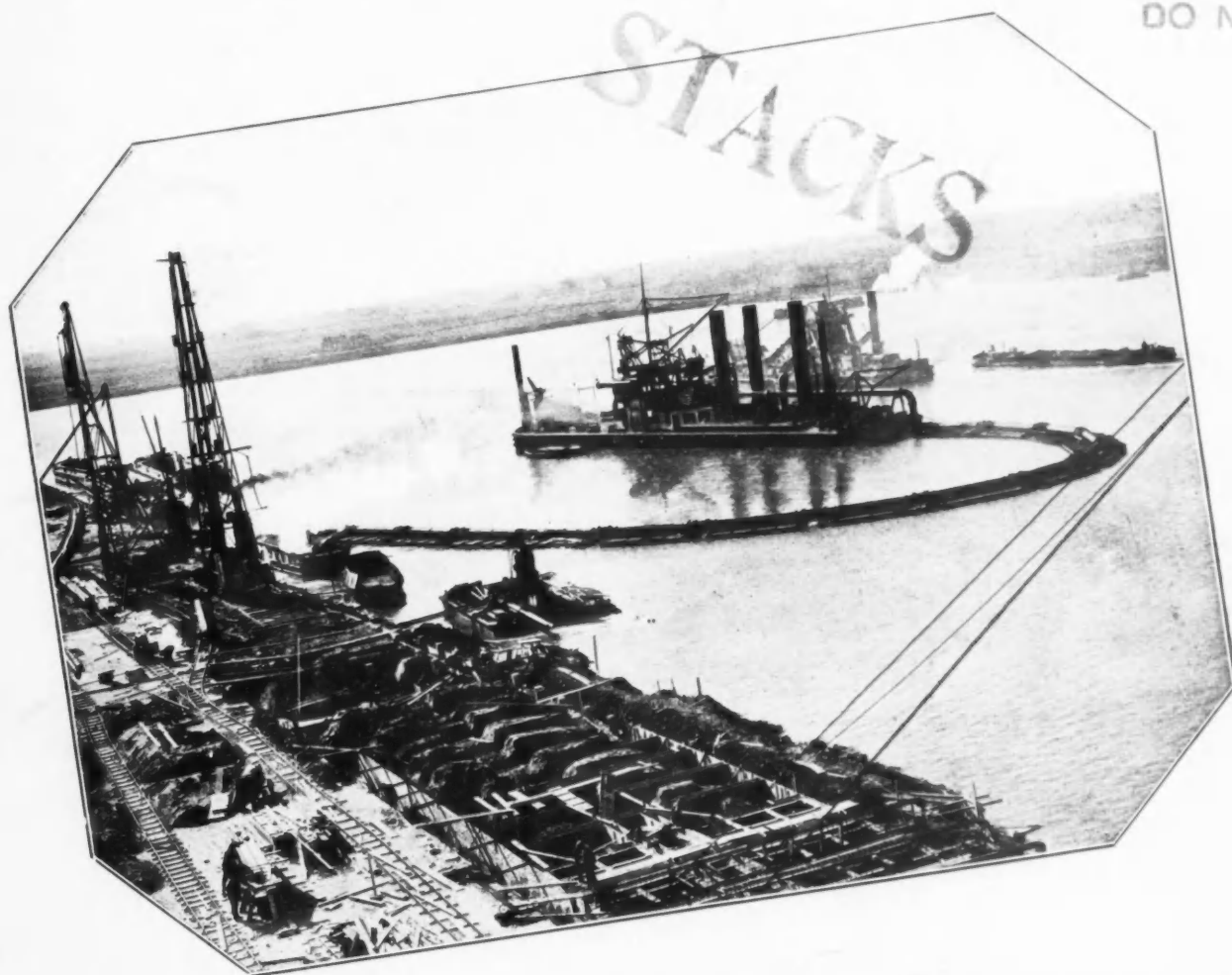


No. 181. Vol. XVI.

NOVEMBER, 1935.

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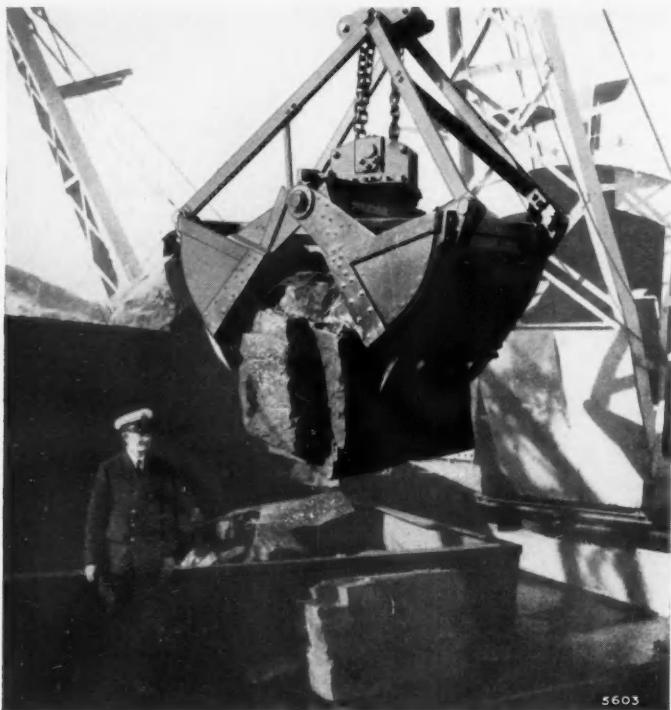
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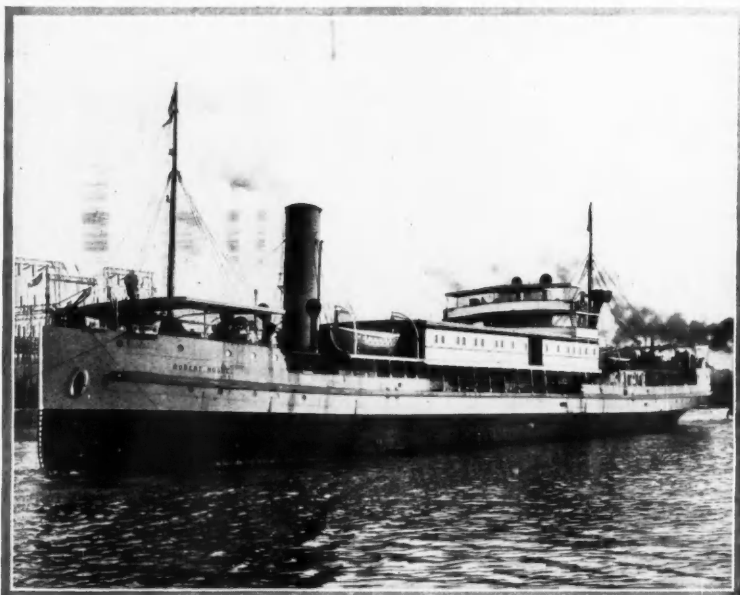
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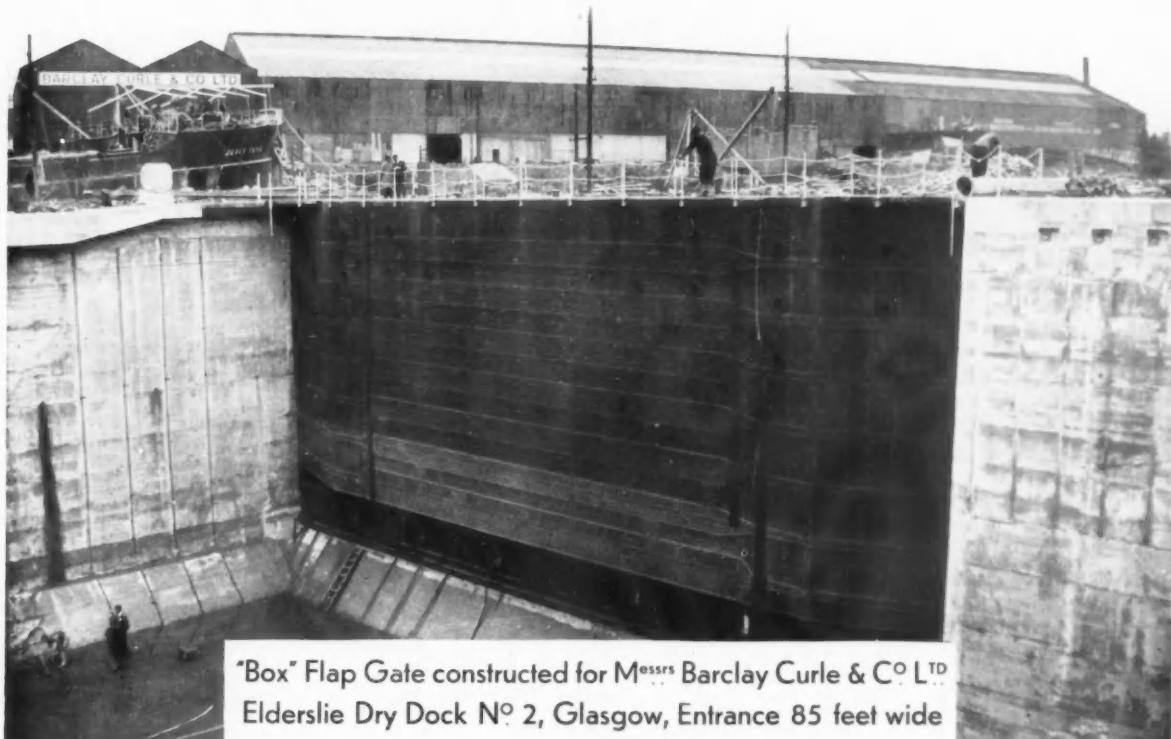
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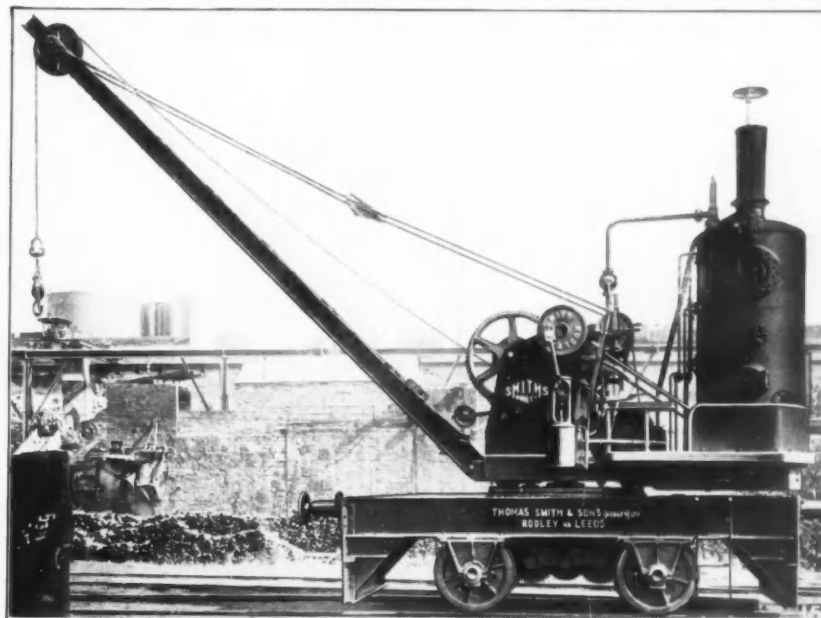
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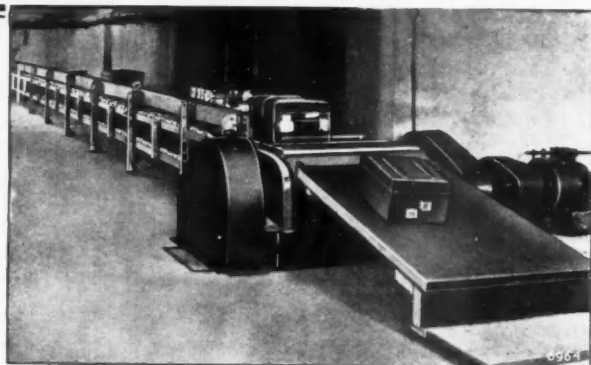
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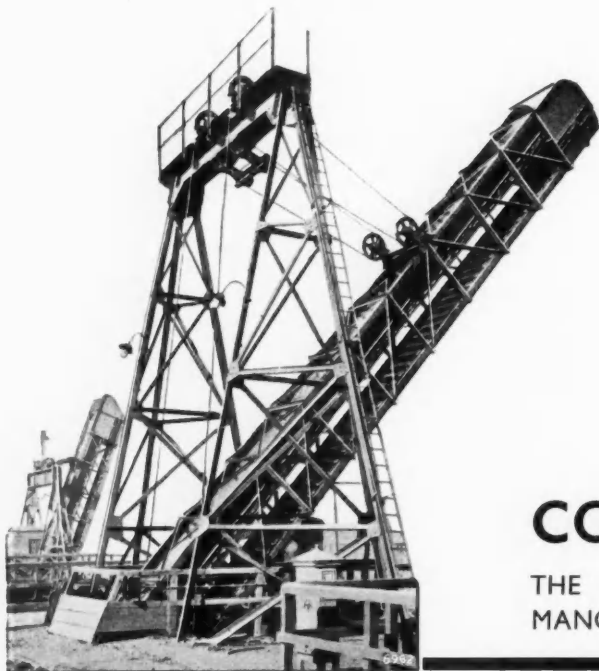
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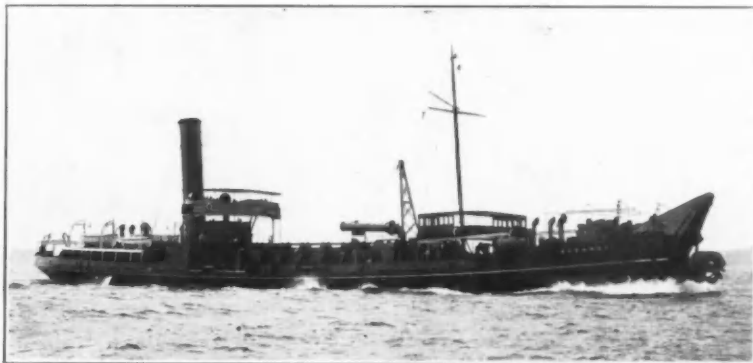
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Contributions which are to be paid for must be clearly marked thus; otherwise they will be considered gratuitous.

If intended for publication in the current month they must come to hand not later than the 20th of the preceding month.

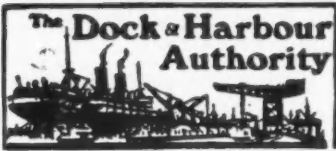
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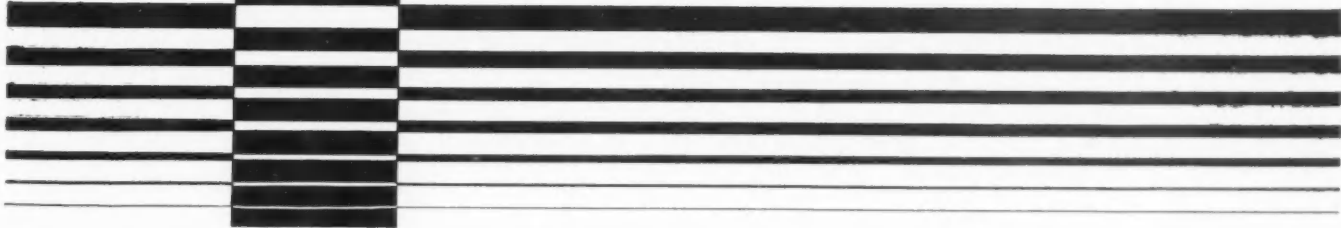
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THE DOCK & HARBOUR AUTHORITY

No. 181. Vol. XVI.

NOVEMBER, 1935

Editorial

The Port of Liverpool.

The Port of Liverpool which is to-day one of the largest ports in the United Kingdom, first came into existence as a port in 1715 when the first dock was opened, but in the intervening space of 220 years tremendous strides have been made, more especially since the port has been under the jurisdiction of the Mersey Docks and Harbour Board.

The biggest strides towards the development of the Port of Liverpool were made between 1800 and 1857, during which period no less than 17 new docks were opened. The Mersey Docks and Harbour Board was constituted in 1858 and the dock estate at that time consisted of 213 acres with a lineal quayside of 22½ miles. The tonnage entering and leaving the port then amounted to 8,883,000 tons.

The extent of the dock estate to-day illustrates the development which the Mersey Docks and Harbour Board have carried out in a matter of 77 years. The dock estate now consists of 1,400 acres, the water area being 646 acres; there are 38 miles of lineal quays, 300 acres of transit sheds and 18 dry docks, and the tonnage entering and leaving the port for the year ended July 1st, 1935, was 40,956,984 tons. The total income for the year was £2,462,970; rates received on vessels, £1,505,549, and rates received on goods, £957,421.

The principal developments carried out by the Mersey Docks and Harbour Board in recent years were the completion of the Gladstone Dock and Branch Docks in 1927, the completion of the Bidston Dock in 1933, and the modernisation of the Central Docks.

The Port of Liverpool for the year ended March 31st, 1935, handled 9.8 per cent. of the total tonnage of vessels which arrived at and departed from the United Kingdom ports, London being the only port which handled a larger tonnage.

An illustrated article on the Port of Liverpool appears in this issue and Liverpool also forms the supplement for this month.

Growth in Banana Trade at Southampton.

One of the most striking features in connection with the cargo trade at Southampton in recent years has been the growth of the banana trade. Within the past four years it has grown to such proportions that Southampton is now the third biggest import centre for this fruit in the United Kingdom.

When, in July, 1931, a part cargo of 20,000 bunches of bananas was discharged at Southampton there began an association which is now worth a great deal to the port, particularly in regard to the employment of labour.

The traffic, once started, developed rapidly. In 1932 a total of 806,000 bunches (16,500 tons) was discharged. The following year the total rose to 1,583,000 bunches, and last year the figure was 1,853,000 bunches. Already this year the 2,000,000 figure has been passed.

The biggest individual cargo ever landed at Southampton was brought, during September, by the "Chirripo," which landed 115,888 bunches.

Official Opening of the Kustenkanal.

The Kustenkanal was opened for traffic on the 28th September, 1935. This canal connects the districts of Oldenburg and the Lower Weser Ports, Elsfleth, Brake, Nordenham, Wesermünde, Bremerhaven and Bremen with the territory west of the Ems, including the Prussian and Oldenburg moors.

The Kustenkanal joins the Dortmund-Ems-Kanal at the village of Dorpen, 15 kilometres south of Papenburg, Oldenburg State. It has a length of 60 kilometres, and there is a lock into the Dortmund-Ems-Kanal at Dorpen and one into the River Hunte at Oldenburg. The canal runs into the Dortmund-Ems-Kanal in a southerly direction, as the most traffic is expected to and from that district. For the traffic (to

the north) to and from Emden into the canal a large turning basin has been constructed. The Dorpen Lock, about five kilometres east of the canal terminus, has, like the lock into the Hunte, a width of 12 metres and a length of 105 metres. The confluence of the Hunte with the Weser is at Elsfleth.

New Harbour to be Constructed at Sao Sebastiao, Brazil.

Tenders are shortly to be invited for the construction of a new harbour at Sao Sebastiao on the coast of the State of Sao Paulo between Rio and Santos, a scheme which was originally proposed a considerable time ago. The project will involve the construction of a mole 15 metres in breadth and leading out to sea for 580 metres, a sufficient length to bring the end into deep water. At the end of the mole a quay 250 metres in length and 50 metres in breadth is to be built, the quay and the mole together forming an L-shaped structure. The depth is to be 8 metres on the outer part of the quay and 6 metres on the inner. Storage sheds are to be built on the quay with a total floor area of 500 square metres. In connection with the above harbour construction scheme, the transport authorities of the State of Sao Paulo are working out further plans for improving the road and rail connections with the new quay.

Shipping at Hull Docks.

The shipping entering the Hull docks and paying dues during the first nine months of the year exceeded five million net tons, and with a busy quarter in prospect there are hopes that by the end of the year the highest previous yearly total of seven million tons in 1930 will have been approached, or that the pre-war record total of 6,692,000 tons in 1913 will have been passed.

Though the shipping tonnage of the port has been maintained at above last year's level the amount of goods handled and transported shows no marked improvement. The imports of wheat and kindred cereals, for example, are down by 107,000 tons, and timber by 130,000 loads. On the other hand, there is some compensation in larger arrivals of oilseeds, nuts and kernels which exhibit an improvement of 37,500 tons, while sheep's wool destined for the West Riding is up by 610,200 centals. Butter, lard and bacon imports continue to shrink.

The extended use now being made of the London and North-Eastern Railways oil depot at Saltend is shown by the fact that in the past nine months the imports of petroleum aggregate 118 million gallons and are 11½ million gallons greater than at the same date last year.

The Port of Hull has suffered severely from the failure of the coal export trade to recover the levels of three or four years ago before the operation of the Coal Mines Act became effective. Taking the Humber ports (Hull, Grimsby, Immingham and Goole) together the exports of coal to places abroad during the third quarter of the year amounted to 810,091 tons, against 805,695 tons in the corresponding three months of last year. This brings the total for the nine months up to 2,407,357 tons, as compared with 2,428,522 tons.

Shipments of bunker coal have, however, been maintained at around a quarter of a million tons per month. The institution of a separate quota of production for export and bunker purposes having failed to meet the difficulties experienced by Humber exporters in obtaining adequate and suitable supplies, a new method is to be tried. From November 1st there will be what is known as an export pool, to which all collieries will contribute, which exporters will be able to draw upon for their requirements, and at the same time give them assurance in quoting for forward delivery. For some time past the excellent coal shipping facilities and appliances at the ports (including anti-coal breakers, electric belt conveyors, etc.) have been used at no more than 50 per cent. of capacity.

Notes from the North

Thanks to the Mussel.

Interesting evidence concerning the efficacy of mussels in protecting the Ribble training walls was given at an inquiry at Preston into an application by the Lancashire County Council for an order under the Sea Fisheries Act of 1868 for the establishment and maintenance of a mussel fishery in certain parts of the estuary of the Ribble.

Mr. H. E. Nutter, Town Clerk to the Preston Corporation, pointed out that Preston was the harbour authority. The capital expended by the Preston Corporation on the undertaking was £2,000,000, and there was an outstanding debt of £1,000,000. The tonnage handled by the Corporation in one year amounted to 1,000,000, and vessels regularly came up from the sea carrying cargoes of 5,000 tons. Twelve hundred men were regularly employed at the dock.

The Corporation had erected training walls about 14½ miles down the river and were now engaged in lengthening the walls to 16 miles. The Corporation had marked out its own channel for the convenience and safety of shipping, and if markings and buoys were allowed in the Ribble without the consent of the harbour authorities, there might be confusion and danger to shipping.

Mussels collected on the training walls, and these mussels bound the walls together. In that way they provided a great saving in the cost of maintenance, and were a very valuable asset to the Preston Corporation. If the order was granted, great damage would be done to the walls by mussels being taken from them and the Corporation would have to pay a fairly large sum each year to keep the walls in proper repair. It might be that notwithstanding the order, the harbour authority would have the right to prevent trespass on their walls and prevent any damage being done to them. They had been erected with the authority of Parliament and at great expense to the town.

The Ribble Engineer (Mr. A. H. Howarth) said the cost of erection of the length of training walls was £371,000. If mussels were taken from them they would eventually lose their height and collapse. Before the fishing prohibition, the maintenance of the walls cost £1,400 per annum, but since then when the mussels had been allowed to collect the maintenance cost was only £520 per annum.

Caernarvon Retirement.

Capt. Richard Jones, harbourmaster at Caernarvon, intends to retire. He has held the position for ten years. A committee has been nominated to arrange to fill the vacancy.

Isle of Man Commissioners order Hopper Dredger.

The Isle of Man Harbour Commissioners have placed an order for a new grab hopper dredger with all the necessary accessories, with Messrs. Priestman Bros., of Hull. The hull, which is being built by Messrs. Lobnitz, Renfrew, is approximately 90 ft. long and 23 ft. beam, with a depth of 7 ft. 6 ins. and a mean draught of 6 ft. The speed is six to eight knots. The capacity of the vessel will be 105 tons, and will dredge 45 ft. below water level. The capacity of the grab will be 18 cu. ft.

In the Isle of Man Tynwald, the Receiver-General stated that £90,000 had been spent by the Harbour Commissioners in the last twelve years for dredging the various harbours of the Isle of Man. The vessel ordered would do most of the dredging which had been done during that period, by English firms. Of the sum of £90,000 spent, £60,000 had been expended in removing clay and silt, which could have been done by the Board themselves if they had then possessed a dredger of this class. The other £30,000 was spent in removing rock which no dredger could take from the bottom of the sea until it was broken up.

The Receiver-General also stated the chief engineer had estimated that the vessel could scour 300 tons of silt per day of nine hours, and remove it out to sea, and there was room for two years' continuous dredging in the various harbours of the Island at present. There were two berths at the Red Pier, one on either side, to be kept clear, and the end of one of these berths, on account of the sudden steepening there, would want cleaning regularly. There were 81,000 "barge yards" waiting to be dredged in the various harbours of the Isle of Man, and if the Commissioners were to ask for tenders (Mr. Cain said) they would be very fortunate to get one for four or five shillings per barge yard from a contractor. To do it themselves, the cost at the outside would be two shillings per yard. At Peel Harbour alone, outside and between the end of the breakwater and the harbour, there were 54,000 barge yards to be dredged. That would cost alone £11,000 if done by a contractor.

How Tunnel has affected Ferries.

Birkenhead Corporation accounts show the effect of the opening of the Queensway Tunnel on the goods traffic across the Mersey by the Woodside luggage ferry steamers.

The net result for the period from 18th July, 1934, when the financial control of the Corporation ferries was transferred to the Mersey Tunnel Joint Committee, to 31st March this year, is a deficit on the working of the undertaking of £63,927. This will be met by the Joint Tunnel Committee during the current financial year.

The greatest loss is on the goods steamers. For the full twelve months the total takings amounted to only £51,526, as compared with £130,112 in the previous year and £122,765 for the year ending March, 1933. From 1st April, 1934, to the date of the opening of the tunnel, the goods receipts totalled £42,159, which was about comparable with a similar period of the previous year, but from 18th July to the end of March this year the slump was considerable, only £9,367 being taken in tolls for the eight and a half months.

Closed Ferry.

Wallasey Corporation has closed New Brighton ferry for the winter months to enable repair work to the pier, bridges and landing stage to be effected. One section of the Council holds the view that New Brighton ferry should be closed not only this winter, but every winter, as its continuance during the October to April period entails a loss of £3,500 annually. It is only consideration for the members of the staff who would be thrown out of employment which has restrained many of them from stressing this point.

Damage to Sea Wall.

Damage estimated at £1,800 was caused to the temporary sea wall at Wallasey by the recent storms. Two lengths of about 30 yards each of the sea wall suffered as a result of the fury of the waves, which dashed over the wall and washed out the fillings. Some damage was also done to the construction work connected with the extension of the promenade from Harrison Drive to the Red Noses. A number of the temporary piles suffered.

Proposed Ferry Improvements.

Ferry improvements at Fleetwood are contemplated. It was stated at the Council meeting that the Council spent many hundreds of pounds last year in repair work, and the importance of the ferry to the town could not be over-emphasised, for it was the front door to Fleetwood's foreshore attractions.

Liverpool Coastal Trade.

The Coastal Trade Development Council issued a questionnaire to Liverpool and other ports interested in the coastal trade to ascertain current tendencies of trade, and the progress or decline of the industry since pre-war days. The Council have sifted the replies, and in their report state:—

The North-West Coast ports, particularly Liverpool, have shared in the rising prosperity of the coastal trade. Several of the most up-to-date vessels yet built for the British industry are plying regularly between the Mersey, the South-west and London.

"There is scarcely a port in the British Isles with which Liverpool does not trade by regular coastwise or cross-channel steamer," states Mr. L. A. P. Warner, general manager and secretary of the Mersey Docks and Harbour Board (the report continues).

"In the case of transshipment cargoes, the coasting trade has been responsible for assisting in the stimulation of the growth of industry on Merseyside. This has been particularly noticeable in the case of grain, for the Mersey port is the second milling centre in the world, and a large proportion of the manufactured flour is distributed by coastwise vessels, in addition to which thousands of tons of grain are transhipped for milling in other parts of the country."

Compared with 1914, fewer coastal vessels are now using the River Mersey, while tonnage using the port in 1934-35 was 3,972,000, as against the tonnage of 4,049,000 in 1914.

"There has, however, been a steady increase in the coastwise traffic to and from Liverpool during the last two years," adds Mr. Warner, "with the exception of that between Liverpool and the Irish Free State ports, the coastal tonnage paying dock tonnage rates having increased from 2,382,000 to 2,529,000."

Aden Port Trust

The returns of shipping using the Port of Aden for the month of August, 1935, are as follows:—

Merchant Vessels over 200 tons	...	No.	Tonnage
" " under 200 tons	...	131	530,266
Government Vessels	...	3	486
Dhows	...	5	10,546
	...	38	1,308
PERIM.			
Merchant Vessels over 200 tons	...	16	48,571

was Rs. 40,93,000/- as compared with Rs. 47,50,000/-, for August, 1934, and of exports Rs. 28,74,000/- as compared with Rs. 22,32,000/-.

The total value of both imports and exports together was Rs. 69,67,000/- as compared with Rs. 69,82,000/- for the corresponding month last year.

Imports during the month were above those for August, 1934, in the case of coffee, grain, pulse and flour, hardware, raw hides, seeds, raw skins, printed or dyed piece goods twist

TRADE OF THE PORT.

Article.	Unit	Imports		Exports	
		Quantity.	Value Rs.	Quantity.	Value Rs.
Coal	Tons	7,072	1,55,151	0	0
Coffee	Cwts.	8,691	2,65,900	8,605	3,31,194
Grain, Pulse and Flour	"	39,350	2,04,256	24,888	1,30,304
Gums and Resins	"	230	4,317	1,901	45,298
Hardware	"	0	41,953	0	44,938
Hides, raw	No.	1,880	1,947	3,505	5,778
Oil, Fuel	Tons	29,376	6,84,495	0	0
" Kerosene	Gls.	31,872	21,692	1,072	711
" Petrol	"	50,934	45,559	8	8
Salt	Tons	0	0	26,750	2,93,800
Seeds	Cwts.	4,034	31,038	695	7,016
Skins, raw	No.	300,802	1,47,103	614,200	3,73,662
Sugar	Cwts.	15,788	75,141	22,945	1,08,515
Textiles—					
Piece Goods, Grey	Yds.	2,370,650	3,20,951	1,422,580	1,90,001
" " White	"	631,784	93,800	311,000	52,085
" " Printed or Dyed	"	877,149	1,72,702	1,256,640	2,15,448
Twist and Yarn	Lbs.	127,320	58,707	48,286	19,593
Tobacco, Unmanufactured	"	692,636	1,31,954	400,260	79,532
" Manufactured	"	74,253	64,332	30,632	20,584
Other Articles	No. of Pkges.	70,830	13,00,142	14,855	4,93,898
Treasure, Private	"	0	2,21,380	0	4,61,531
Total	—	—	40,92,555	—	28,74,396

The number of merchant vessels over 200 tons that used the port in August, 1935, was 131 as compared with 142 in the corresponding month last year and the total tonnage was 530,000 as compared with 578,000.

Excluding coal, salt, fuel oil and military and naval stores and transhipment cargo, the total tonnage of imports in the month was 8,100 and of exports 5,100 as compared with 7,200 and 4,900 respectively for the corresponding month last year.

The total value of imports, excluding Government stores,

and yarn and manufactured tobacco; and below in the case of gums and resins, sugar, grey and white piece goods, unmanufactured tobacco and private treasure.

Exports were above those for August, 1934, in the case of coffee, grain, pulse and flour, gums and resins, hardware, seeds, raw skins, white, printed or dyed piece goods and private treasure; and below in the case of raw hides, sugar, grey piece goods, twist and yarn, unmanufactured and manufactured tobacco.

Irish Harbour Matters

Liners in Dublin Port: Adequate Landing Facilities.

Allegations that inadequate facilities were provided for the landing of passengers from ocean liners were denied at a meeting of the Dublin Port and Docks Board, Mr. C. P. O'Kelly, vice-chairman, presiding.

Mr. O'Connor, a member of the Board, said it was suggested that there were not sufficient gangways for the landing of passengers, and he thought that a committee should be appointed to deal with the matter.

Capt. J. K. Webb, harbourmaster, wrote stating that the gangways for disembarking passengers were provided by the liner and the Board had nothing to do with it. Only two gangways could be used, and there had been no congestion on the day mentioned by the writer of the letter.

In a letter to the Harbourmaster, Mr. W. J. O'Hare, representative of the Cunard-White Star Company, said that on the day referred to there had been two large gangways, and no more gangways could be used. The landing of passengers had commenced at 3.45 p.m., and had been completed at 5.5 p.m., which hardly could be bettered in any port in the world.

It was decided to set up a special committee, as suggested by Mr. O'Connor.

The Harbourmaster reported that on 21st September the Cunard-White Star liner, "Laurentic," had come alongside the quay at 5 p.m. with 1,300 pilgrims, including stretcher cases aboard, and had sailed again at 7 p.m. This showed clearly that ocean-going steamers could enter and leave the port on the same tide.

The Lord Mayor (Ald. A. Byrne) said that great credit was due to Capt. Webb and to the captains of the tugs. The achievement should be broadcast widely in the interests of the port.

Limerick Harbour Revenue.

Mr. D. McNeice, Secretary, at a meeting of the Limerick Harbour Board, declared that revenue had dropped by £4,194 12s. 0d. during the nine months ending last September. Imports had decreased by 52,000 tons, while exports had increased by 1,317 tons, and cattle by 5,300 head. Wheat and maize imports were down by 33,000 tons, sugar by 2,000 tons, and timber by 16,934 tons. Of the 7,948 cattle exported, 3,000 went to the Continent. The Board would, however, be able to meet their obligations, but he expected a further decline in imports.

More Cargo Increases for Southampton Docks.

Southampton Docks still make progress, and the Southern Railway announce that an increase of approximately 11 per cent. over September, 1934, was recorded in the cargo traffic imported into Southampton Docks in September.

Compared with the corresponding period of 1934, the increase for the first nine months of this year is nearly 13 per cent.

Amongst the new traffic which is being handled at Southampton Docks is a consignment of 500 cases of Australian eggs which was unloaded this week from the Aberdeen and Commonwealth liner "Jervis Bay." This is the first consignment of its kind to be shipped via Southampton.

Port of Lowestoft



Lowestoft Quay.



Sheet Piling at Entrance to Dry Dock during Rebuilding of Lock Gates.

The Port of Lowestoft

By CHARLES RIGBY



The Harbour, Lowestoft.

THE rise of Lowestoft as a port was, curiously enough, the indirect outcome of an ambition long cherished by Norwich merchants to connect their city with the sea. At the beginning of the 19th century, the cry, "Norwich a port," received such popular support that it gave the name to a local public-house. And from the cry, and the movement it represented, sprang the modern Port of Lowestoft.

It was about the middle of last century that Lowestoft was declared an independent port. In 1852 its limits were extended from League Hole in the North to Thorpeness in the South, including Southwold. In former times Lowestoft suffered a good deal from the rivalry of the Port of Great Yarmouth, which is in Norfolk, some 15 miles to the North, while Lowestoft is in Suffolk. This, at one stage of the feud, went to the length of armed clashes at sea. But legislative enactments



Large Timber Ship at Lowestoft.

The Norwich merchants started a scheme to put their ideas into effect in 1821. A company was formed, with £100,000 capital in £100 shares. A Bill was promoted in Parliament and, despite violent opposition from Yarmouth, received the Royal Assent. The first step was to join the Waveney to the Yare, by a canal which is now known as the New Cut. Lowestoft Harbour was formed by cutting through the sandbanks of Lake Lothing to the sea. It was opened with much ceremony, in 1831, having cost £80,000. The first swing bridge for road traffic also came into use. The latter was replaced by the present bridge in 1897.

This first harbour undertaking, however, was beset by financial difficulties. The original capital became exhausted before it could be made a paying concern, and money had to be borrowed from the Government on mortgage. It was then found to be impossible to pay the interest on the mortgage, and in 1842 the harbour was sold to a syndicate of local men, who "held on in a kind of way" till 1844. In that year Sir Samuel Morton Peto came to Lowestoft with a scheme for developing the port, which included the construction of a railway. The idea caught on, and a company was formed with £200,000 capital to improve the harbour and make the railway, the scheme receiving sanction by Act of Parliament in 1845.

laid down and protected the independence of Lowestoft for all time.

In 1883, a dock was opened north of the North Pier, which, with the South Pier, formed the outer harbour. This was the present Waveney Dock or Herring Basin, with an entrance through the harbour. In 1892, there was a dock extension westward. The Hamilton Dock, 800 ft. by 450 ft., was opened in 1907 for the better accommodation of the fishing fleets. These docks form the Outer Harbour system, and, with a quayage of 4,470 ft., serve the purposes of the fisheries.

The port, strictly speaking, consists of the Outer and Inner Harbour, separated by a swing road bridge. The Inner Harbour is described as a piece of water two miles long. It was formed by dredging Lake Lothing, and cutting through a sandbank which had barred the passage between the Lake (really the head of the River Waveney) and the Outer Harbour. Since this was done it has been possible to convey merchandise from the sea to as far inland as Beccles and Norwich.

The Inner Harbour is used chiefly for general trade, and the length of the quayage is 5,350 ft. The depth of water is 14 ft. at low and 19 ft. at high tide, as against 11 ft. and 16 ft. respectively at the fish quays.

Port of Lowestoft—continued

The port may be described as follows:—

OUTER HARBOUR.

Approach channel.

Harbour.

Trawl Basin—7½ acres; covered area, 27,600 ft.

Waveney Dock or Herring Basin: 11½ acres; covered area, 64,600 ft.

Hamilton Dock: 8½ acres; covered area, 22,000 ft.

The bulk of the trade of the port has always been connected with the herring fisheries. Trawling goes on all the year round, but the herring season is confined to a period between mid-September to mid-December. The peak of the trawling trade is reached about January, the principal catches being sole, plaice and haddock. There is a mackerel season in May and June, but the importance of this has diminished considerably in recent years due, it is said, to there being fewer mackerel in the North Sea. Some spring herring are caught,



Big Cargo of Sleepers for L.N.E. Rly. Co., at Lowestoft.

INNER HARBOUR.

Main Basin.

Graving Dock (opened April 26th, 1854): 250 ft. by 48 ft.

Patent Slip: Length of cradle 84 ft.; depth of water forward 6 ft. 6 ins.; aft 13 ft.

Two L.N.E.R. Slipways, 320 ft. long, for vessels up to 150 tons.

The area of the harbour and basins is 74 acres.

The port equipment includes:—

Lifting barges.

One 20-ton set of sheer legs, on North Quay.

Shore cranes, 25 tons.

One crane on North Quay, 7 tons.

One hand crane, Richard's Wharf, to lift 25 tons.

The Harbour Authority is now the L.N.E.R. Company, which, in the post-war grouping of the railway system, took over what was formerly known as the Great Eastern Railway. Lowestoft's facilities as a port were, in the first place, created by individual owners. Gradually the harbour works were taken over and developed by the Great Eastern Railway Company, which in its turn became the harbour authority. Under the latter régime, considerable improvements were made, and the Hamilton Dock built. Of recent years, the principal development has been the construction of a groyne, now almost complete. The effect of this is that much of the dredging hitherto necessary to prevent the silting up of the harbour, chiefly after north-east winds, will be obviated.

and there is also extensive sprat fishing from the port in November.

The entries of first-class fishing vessels into Lowestoft during the last two years for which figures are available were: 1933—12,375; 1934—10,785.

Most of these were Lowestoft owned, the largest concern, the Consolidated Company, possessing a fleet of 35 boats. During the season, a proportion of Scotch drifters fish from the port—168 in 1933, and 96 in 1934.

Vessels entered, not being fishing vessels, were:—1933—372; 1934—267.

The net registered tonnage of vessels entered and cleared were:—1930—159,424; 1931—126,172; 1932—104,303; 1933—101,308; 1934—113,436.

The principal goods imported consist chiefly of coal, timber and oil.

The decline in trade noted during the years 1933 and 1934 was chiefly caused by the restrictions imposed by the German Government on the export of currency. The matter was righted following representations from the British Government, but not in time to save the port serious loss. A large proportion of the herring catch goes to Germany. The remainder goes to the Baltic States and the U.S.A. The home market is small.

In the following figures, the decline has followed largely the loss of the Russian market, though efforts have been made recently to re-establish it.

BOARD OF TRADE RETURNS—IMPORTS

	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933
Coal (tons) ...	—	13,307	—	—	—	—	73,377	—	—	—	—	—	—	—
Fruit (cwt.s.) ...	—	10,200	—	—	—	—	—	—	—	—	—	—	—	—
Fish (cwt.s.) ...	5,174	59,231	14,327	14,447	10,307	5,382	19,800	12,839	36,848	19,718	6,077	5,713	5,183	1,604
Granite (tons) ...	—	—	—	—	—	—	—	—	—	11,899	10,226	2,550	2,220	2,685
Wood and Timber (loads) ...	11,386	8,449	9,411	13,930	12,466	—	—	—	17,251	17,323	16,790	8,142	10,786	9,070
Sleepers (loads) ...	247	16,312	4,058	14,192	28,050	—	—	—	4,615	9,371	17,033	7,465	11,189	9,764

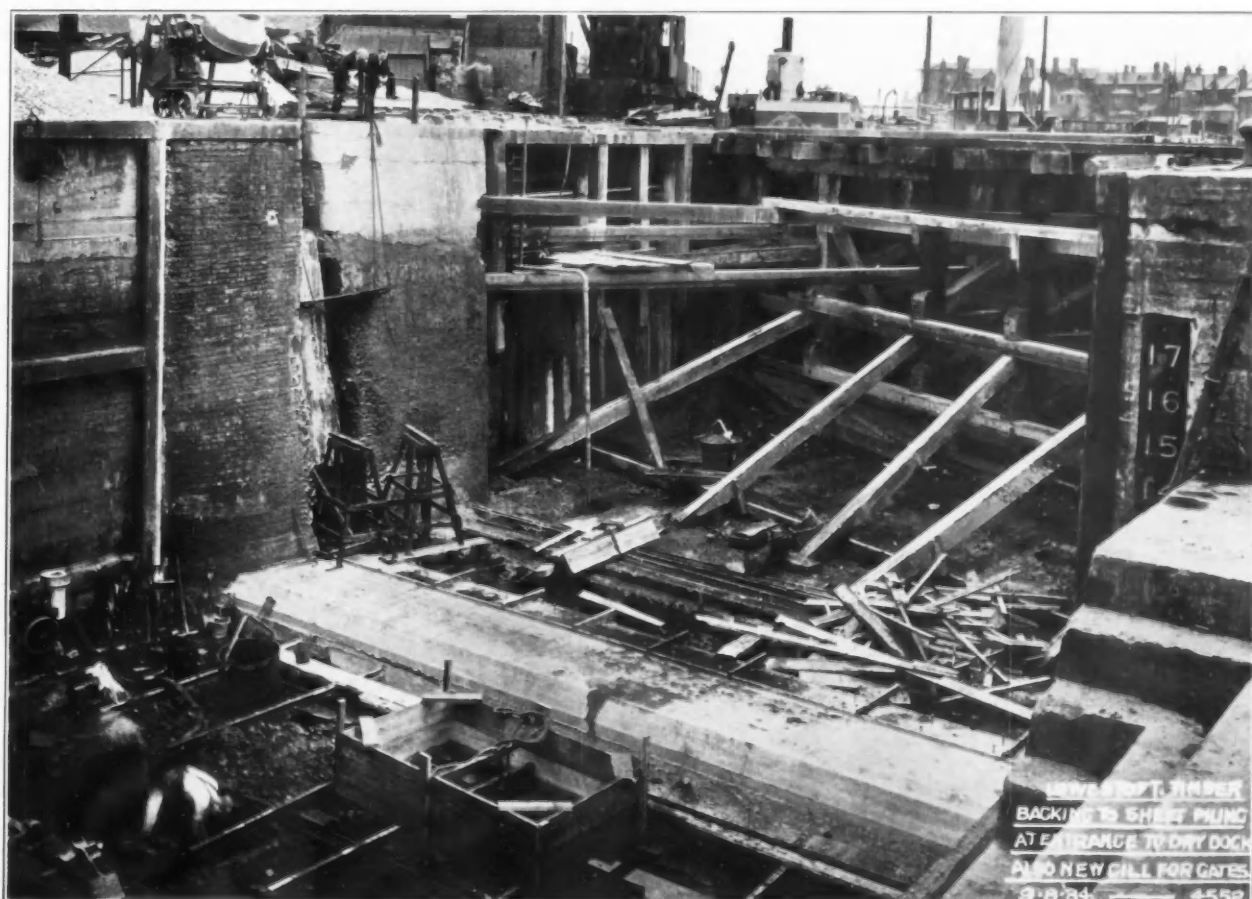
EXPORTS

	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933
Fish (cwt.s.) ...	698,325	951,090	450,095	612,211	1,010,346	1,130,776	993,918	1,029,581	1,009,262	1,255,768	1,178,929	861,714	731,038	470,898

Port of Lowestoft



The Harbour, Lowestoft.



Timber Backing to Sheet Piling at Entrance to Dry Dock, also New Cill for Gates.

Port of Lowestoft—continued

The principal export of Lowestoft was brought practically to a standstill by the war. Exports of fish for 1913 stood at 1,745,835 tons and fell to 86,398 in 1914. With the mobilisation of trawlers and drifters as mine sweepers and for other purposes, Lowestoft became in effect a naval base. The port was constantly in danger from enemy shelling or bombing from the air. The post-war recovery was due to the fact that the port facilities, far from lying dormant, were used to the full during the war.

As will be seen, timber imports figure largely in the general trade of the port. These showed a decline for some years, until the erection of a modern box-making factory led to an increase. A huge new canning factory has also recently been opened. Pickles and sauces have been imported in large quantities.

Although Lowestoft cannot be compared with Hull and Grimsby, and the other ports which form part of the L.N.E.R. system, it is none the less one of considerable importance in the national economy. Besides the groyne, mentioned above, the L.N.E.R. started, in 1932, a five-year plan of maintenance for the port, which has involved, among other things, replacing the timbered walls of the harbours and docks with reinforced concrete.

Situated at the easternmost point on the English coast-line, Lowestoft renders great service in time of storm by providing a harbour of refuge for vessels of all kinds. The Government's plan for helping the herring fishery affects the port, although for the present this must be in the direction of restricting the shipping engaged in the fisheries, rather than

increasing it. This in turn naturally involves all the collateral activities of the port. But if only for the sake of its advantages in time of national emergency, the port must be preserved and undergo the nominal development of a port.

Lowestoft played an important role during the coal strike of 1921 and again during the general strike of 1926, for on both occasions it was used in connection with the importation of emergency supplies. As the port authority, the L.N.E.R. is constantly on the watch for new opportunities. The completion of the five-year plan, in 1937, will be but the beginning of another. A great deal will depend, of course, upon political and fiscal conditions in Europe. Another factor will be the extent to which the southward trend of manufacturing industry embraces that part of the country adjacent to Lowestoft.

At present Lowestoft feeds no large industrial centres. Such imports as may be needed for the factories of East Anglia go direct to the smaller inland ports. But when, if ever, East Anglia should become industrialised, then the L.N.E.R. Company, which owns the railway system which at one point terminates at its own port of Lowestoft, may be trusted to co-ordinate the communications as to place the advantages of the port well within reach of new industries. This time may be a long way off, but whatever happens, it is certain that Lowestoft must remain an important port. It may now be said to have reached the upward turn from the lowest ebb in its fortunes. At all events, all that could be done to bring it into line with the most modern port development has been done. The port is there, waiting for more and more shipping and trade.

Port of London Notes

For twelve successive weeks London's shipping has aggregated over one million net register tons. During the week ended 27th September 1,023 vessels, representing 1,030,655 net register tons, used the Port of London. Of these, 521 vessels (839,175 net register tons) were to and from Empire and Foreign Ports, and 502 vessels (191,480 net register tons) were engaged in coastwise traffic.

During the week ended 4th October, 1,030 vessels, representing 966,579 net register tons, used the Port of London. Of these, 491 vessels (764,976 net register tons) were to and from Empire and Foreign Ports, and 539 vessels (201,603 net register tons) were engaged in coastwise traffic.

During the week ended 11th October, 1,314 vessels, representing 1,039,739 net register tons, used the Port of London. Of these, 565 vessels (802,288 net register tons) were to and from Empire and Foreign Ports, and 749 vessels (237,451 net register tons) were engaged in coastwise traffic.

During the week ended 18th October, 1,058 vessels, representing 1,073,273 net register tons, used the Port of London. Of these, 531 vessels (865,317 net register tons) were to and from Empire and Foreign Ports, and 527 vessels (207,956 net register tons) were engaged in coastwise traffic.

Tilbury Passenger Landing Stage.

Seventy-nine vessels, totalling 686,461 gross register tons, used the Passenger Landing Stage during September.

Development of Britain's Largest Timber Depot.

The Port of London Authority recently decided to provide additional under-cover storage accommodation for timber at the Surrey Commercial Docks. Merchants now prefer to store under cover many descriptions of timber which were formerly piled in the open and, despite the steady increase for years past of specially-designed sheds by the Port Authority, including new large sheds in 1934, the present accommodation is inadequate. The erection of three new sheds providing a covered area of 219,180 sq. ft. with a storage capacity of 20,000 tons, is to be put in hand immediately. The site for the sheds is at the north-west corner of the Lavender Dock, Surrey Commercial Docks system, and a unique feature of the development scheme is to be the construction of a canal between the sheds to enable a number of barges to be unloaded simultaneously. A new roadway, with cart-ways for loading facilities, is also to be provided. The estimated cost of the works proposed is £71,500.

When these new sheds are complete under-cover storage accommodation at the Surrey Commercial Docks will be available for 271,000 tons of timber, and the storage capacity under cover and in the open will be for 500,000 tons.

The Surrey Commercial Docks have, of course, always provided the largest timber storage depot in the United Kingdom.

Port of Southampton

Docks Statistics for September.

Although the number of ships, tonnage, and the volume of cargo handled in Southampton Docks during September showed an increase, there was a rather big drop in the volume of passenger traffic.

The number of vessels inward mounted from 291 in the corresponding month of 1934 to 307, and outward from 283 to 293. Gross tonnage advanced by 49,115 tons inward, the total being 1,932,240 tons, as compared with 1,883,125 tons. There was, however, a slight decrease in the outward figure, which was 1,821,432 tons, as against 1,830,051 tons in September, 1934—a drop of 8,619 tons.

In regard to net tonnage there was an increase of 63,399 tons inward, and of 38,864 tons outward. The inward total was 1,027,735 tons, compared with 964,336 tons, and the outward total 979,317 tons, as against 940,453 tons.

The cargo situation was again very pleasing, for both imports and exports mounted appreciably. Imports rose from 54,972 tons in September, 1934, to 61,008 tons, and exports mounted from 29,977 tons to 36,181 tons. The increases were, therefore, 6,036 tons inward and 6,204 tons outward.

It is difficult to suggest a reason for the marked decrease in the volume of passenger traffic, for it has been generally accepted that the North Atlantic season has been better this year than last. However, the number of travellers arriving was only 33,724, as compared with 39,766, and the number leaving was 33,748, as against 35,530. The drop inward was 6,042 and that outward 1,782.

It is very likely that the 1935 figures for Southampton Docks will beat all previous records for the port, for the quantity of shipping tonnage dealt with in the first eight months of the present year exceeded by eight per cent. that for the corresponding period of 1934.

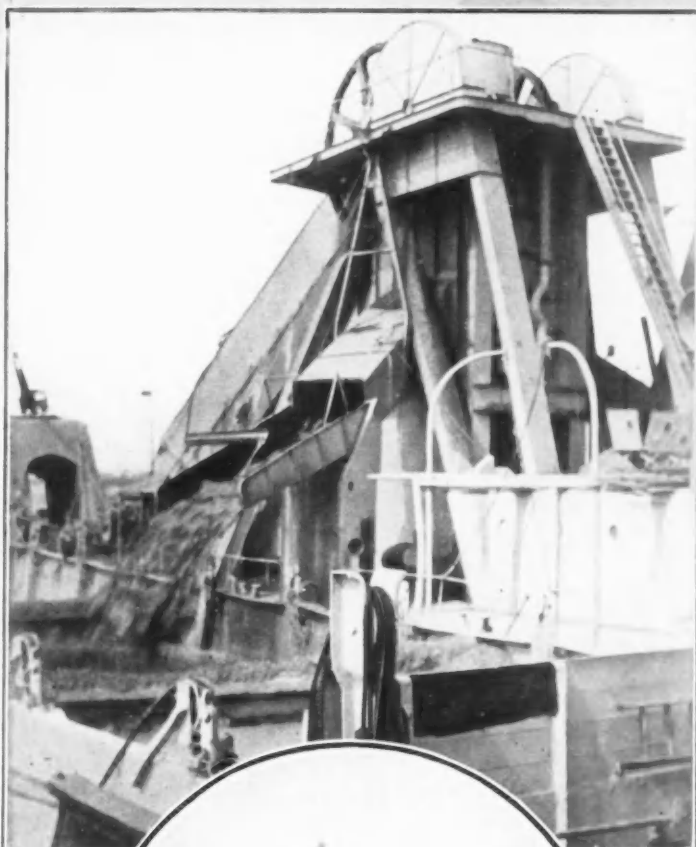
The gross tonnage inward amounted to 12,100,122 tons for that period, compared with 11,223,228 tons in the same period of the previous year, while outward the return was 12,244,232 tons, as against 11,383,007 tons. There was thus a total increase of nearly a million tons of shipping.

Cargo and passenger figures for the period are equally satisfactory. Imports increased from 360,349 tons to 409,010 tons, and exports from 236,448 tons to 239,475 tons.

As regards passengers, the arrivals increased in the period from 175,398 to 200,602, and departures from 176,834 to 205,978.

Milling Industry, Avonmouth Docks.

During the present year the mills which have been constructed by Messrs. Spillers, Ltd., Messrs. R. and W. Paul, Ltd., and Messrs. R. Silcock and Sons, Ltd., have been completed, and all are now in active operation.



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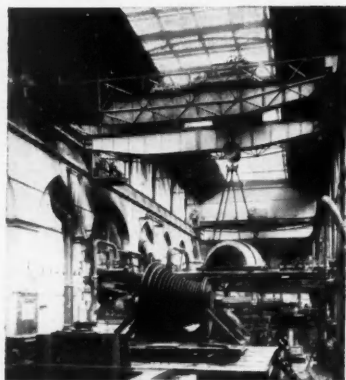
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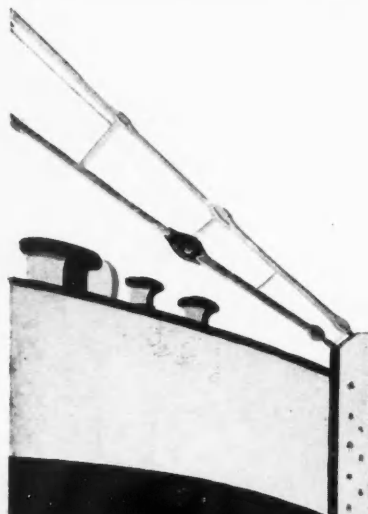
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A "Babcock" 80-ton Electric Overhead Travelling Crane, fitted with Dynamic Braking, 4-motor type. Auxiliary Hoist, 10 tons. Span 62 feet. Installed at Deptford East Power Station, London, by the London Power Company Ltd.

BABCOCK CRANES



PORT OF LONDON AUTHORITY
Royal Albert North Dock and Basin,
South Dock Extension, and Tilbury
Docks. Fifty-six "Babcock" 3-ton
Electric Portal Jib Cranes fitted with
Patent Balanced Lever-Luffing Gear.



A "Babcock" 80-ton Electric Giant
Crane installed by J. Samuel White &
Co., Ltd., at East Cowes, Isle of Wight.
Extreme radius, Main Trolley 72 ft.
6 ins. Extreme Radius Auxiliary Trolley
102 ft. 6 ins.

Babcock cranes are designed to give the utmost precision of handling for such service as seating aircraft, erecting machinery or foundry duty. For this latter service a special design has been evolved having enclosed gears running in oil baths and mounted on ball or roller bearings, a development which has reduced wear to a minimum and made a substantial saving in power consumption. This design is also eminently suited for work in the open or in a corrosive atmosphere and has given first class service in numerous installations over the last six years.

The well-known Babcock Level Luffing Crane continues to find fresh billets from the Baltic to the Pacific, but repeat orders continue to be a prominent feature of our business.



Installed at DEPTFORD EAST POWER STATION, LONDON, by the LONDON POWER CO. LTD. Two "Babcock" 4-ton Electric Travelling Jib Cranes, fitted with Patent Lever-Luffing Gear and Jib. Maximum radius 55 feet. Grabs of 2-rope type for handling small coal, the Cranes being specially designed with two barrels.



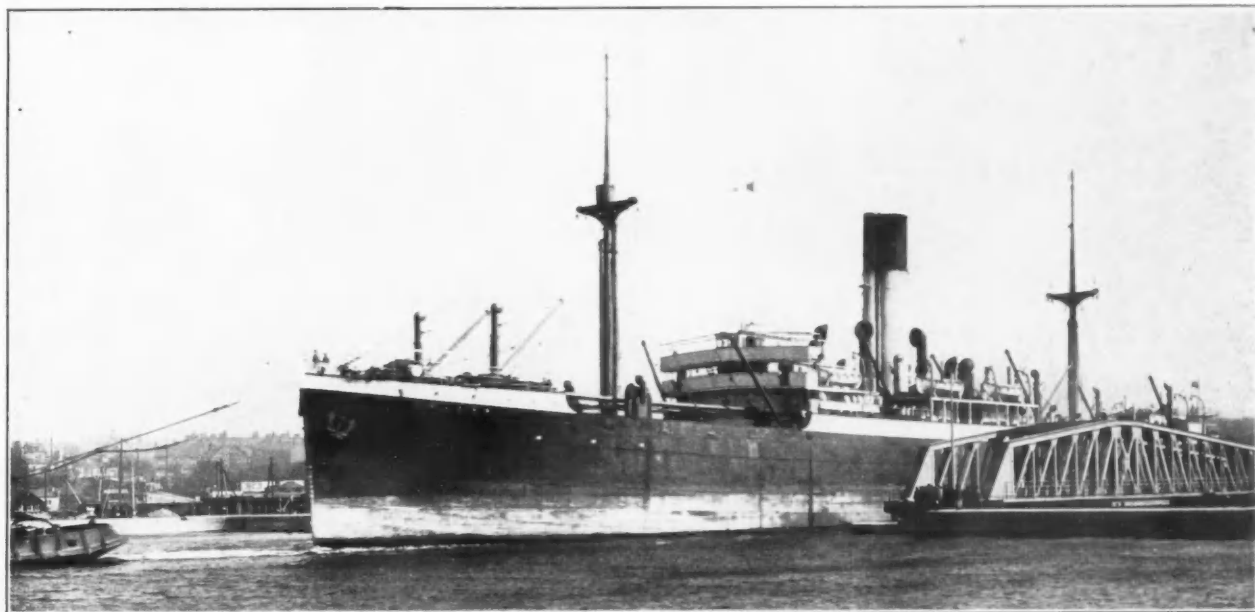
VIGO HARBOUR BOARD, VIGO, SPAIN. "Babcock" Electric Floating Jib Crane to lift 60 tons at 15 Metres radius and 35 tons at 20 Metres radius. Fitted with Auxiliary Hoist to lift 10 tons at 23 Metres radius. Steam engine fitted for propelling pontoon and driving dynamo supplying electric current for crane.

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Rytad

The Port of Liverpool



Blue Funnel Liner "Neleus." First Vessel to enter the Bidston Dock (March 24th, 1933).

MERSEY DOCKS AND HARBOUR BOARD derives about 75 per cent. of its revenue from dues on ships and dues on goods, the amount from ships' dues in the year which ended on 1st July last (1935) being £1,505,549, whilst in the same period dues on goods contributed £957,421, the total being £2,462,970.

It is against this background that one can measure the achievements and triumphs of those responsible for the administration of the great port of Liverpool, which deals with something like 22 per cent., compared with London's 37 per cent., of the overseas trade of the United Kingdom.

In a recent address, Mr. L. A. P. Warner, the general manager, made the statement that if the dues on ships and the dues on cargoes carried by vessels coming into the port, were all transferred to the cargoes entering and leaving the port, the amount per ton of cargo would work out at 3s. 8d. approximately—surely not a large sum, considering the facilities given, and a figure which is comparatively trifling when compared with the ups and downs of market prices and handling and distribution costs.

The year 1934-35 was a good one from the standpoint of traffic. The weight of goods discharged and or loaded in the Board's docks for the year was approximately 13,600,000 tons, as compared with 13,230,000 tons for the previous year.

From the earliest days, Liverpool has kept pace with, and often has been a little in advance of, the demands of ship-owners. By anticipating requirements, cargoes have been attracted to the port that otherwise might have gone elsewhere. It is by creating channels for trade that a group of flourishing industries has been established on the banks of the Mersey.

Amongst these industries are:—Flour milling, shipbuilding, ship repairing, sugar refining, seed crushing, tobacco manufacture, artificial silk manufacture, engineering, automatic telephones, oil and spirit storage.

The principal imports are:—Cotton, fruit, grain, general produce, hides, meat, metals, oils and spirits, provisions, sugar, timber, tobacco and wool.

There are regular cargo and passenger services to all parts of the world operated by companies whose headquarters in most instances are in Liverpool.

The area of the Dock Estate is 1,400 acres, the water area being 646 acres. From the Gladstone Dock, at the north end of Liverpool, to the Herculaneum Dock at the south, there is a river frontage of 6½ miles; parallel with which is the system of docks and basins. There are 38½ miles of quays at which ships discharge and load, the cargo sheds having an area of 300 acres. The Birkenhead Docks have an area of 182 acres and over nine miles of quays, all of them, both on the Liverpool as well as on the Birkenhead side, being equipped with the most modern plant for cargo handling, as well as excellently served in the way of railway communications.

Before proceeding with this analytical survey, it is appropriate to mention that actually within the confines of the port of Liverpool, there are three dock systems. First of all, there is that for which the Mersey Docks and Harbour Board is

responsible; secondly, there are the L.M.S. docks at Garston; thirdly, there is the Bromborough Dock, of Lever Bros., Port Sunlight.

Beginning of the Port.

Without digging too deep into history, it may be stated that in reality King John was the founder of the city. Desiring the conquest of Ireland, he became interested in the possession of Liverpool to facilitate the carrying through of his project. Prior to this time there was no port in Lancashire, and Chester did not lend itself to the King's purpose. The curious thing is that once the foundations of this shipping centre were laid, they have supported a constantly increasing burden of world trade.

It was not until 1715, however, that any real facilities were provided for shipping, and in that year the first dock was opened. The Corporation at that time arranged with Thomas Steers, an engineer, to make a survey, and subsequently a bill was promoted to raise money for the purpose. In due course authority was given to contract on a piece of ground now occupied by the Customs House, the first commercial wet dock of the kind constructed in England. The site was about four acres. It took five years to construct this harbourage, by which time Acts were passed for rendering the rivers Mersey and Irwell navigable from Liverpool to Manchester. This first dock was the real foundation of the Mersey Dock Estate. It ran eastward and westward in the direction of the old pool. One immediate effect of the opening of this dock was an increase in the number and size of vessels which used the port.

Success begets success. The next development was the construction of South Dock, which afterwards was re-named the Salthouse Dock because of a large salt warehouse which stood near the site. Then a pier was run out on the north side of the entrance to the old dock to provide shelterage for vessels. This pier formed a sea wall or boundary of the intermediate space, extending from the old dock gut to the river. It had no flood gates and was empty at low water. In 1829, this dry basin was converted into a wet dock and received the name of Canning Dock. The old dock was closed in 1826.

It might be appropriate to mention at this point that in 1762 there was constructed on land lying between James and Chapel Streets a dock known as Georges Dock. Reconstructed in 1825, it was operated for 75 years and then closed, the site being utilised for other purposes. Between 1700 and 1800, trade was carried on with the Baltic and Norway, the British Colonies in America, West Africa, Ireland, and the European countries generally.

At the beginning of the nineteenth century the dock acreage at Liverpool was 28. Various Acts of Parliament were passed in the next 40 or 50 years, authorising the construction of additional docks and giving powers for changes in administration, the management of the docks being delegated to a committee of 21 selected from the council, who were known as the trustees. The proceedings and decisions of the trustees, however, were subject to the veto of the Council.

Port of Liverpool



Birkenhead: Alfred Dock Entrances.



Shipping in Huskisson Dock.

SUPPLEMENT TO THE DOCK AND



AND HARBOUR AUTHORITY, NOVEMBER, 1935.

PORT OF LIVERPOOL

UNDER THE JURISDICTION OF THE MERSEY DOCK

SCALE OF FEET.

Feet 1000 500 0 1000 2000 3000

NOTE:— Dock Areas are coloured Brown.
Railway Goods Yards coloured Green.



LIVERPOOL.

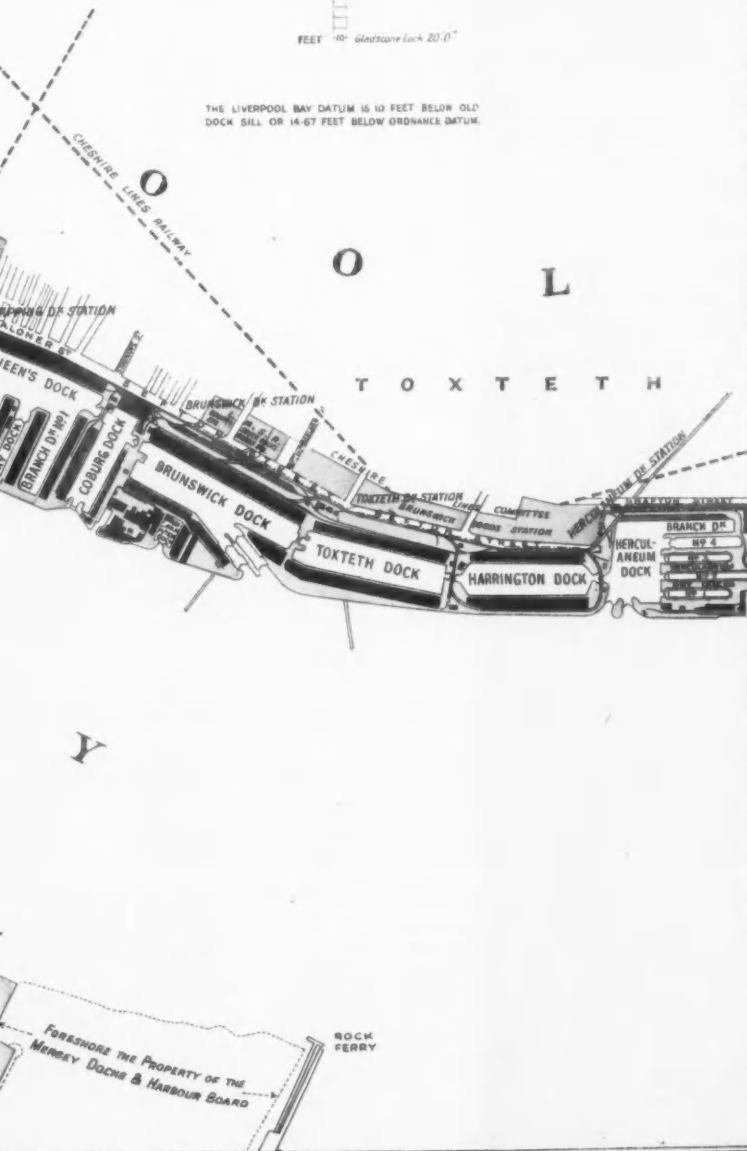
Y DOCKS AND HARBOUR BOARD.



DEPTH OF SILLS AT DOCK RIVER ENTRANCES
IN RELATION TO ORDINARY TIDES.



THE LIVERPOOL BAY DATUM IS 10 FEET BELOW OLD DOCK SILL OR 14.67 FEET BELOW ORDNANCE DATUM.



Port of Liverpool—continued

By this time Liverpool had fairly outstripped Bristol, Customs House receipts on dutiable goods being approximately twice as great, the respective figures being:—Liverpool £648,000, and Bristol £335,000. During the 57 years ending 1857, several new docks were opened, including the Princes, Clarence, Brunswick, Waterloo, Trafalgar, Coburg, Toxteth, Albert, Salisbury, Collingwood, Nelson, Stanley, Bramley-Moore, Wellington, Sandon, Huskisson and Wapping.

That period, of course, was one of industrial renaissance. Railways had made it possible to feed masses of people in big towns and supply them with raw materials for manufacture. The Lancashire coal industry flourished, and, as the climate of the county suited the manufacture of cotton, the textile industry took root and prospered. The port by this time had attained status and recognition as an important link in the chain of national and international communications.

When the present Mersey Docks and Harbour Board was formed the Dock Estate consisted of 213 acres, with a lineal quayage of 22½ miles, the tonnage entering and leaving the port amounting to 8,883,000 tons.

How the Dock Board Functions.

It was in 1858 that the Mersey Docks and Harbour Board, which was constituted by Act of Parliament, was formed to take over the entire control of the port accommodation, but before this, there was a long drawn-out struggle between various contending parties as to the manner in which the proposed port authority should exercise control. As a matter of fact, in the year 1853, a Royal Commission recommended the formation of a new body to take charge of the docks and to whom all the property and dues should be transferred. Three years later, a Bill to give effect to these recommendations was introduced, but withdrawn. Subsequently, another similar Bill was promoted by the Manchester Commercial Association, the Manchester Chamber of Commerce and the Great Western Railway Company.

The main provisions of the Bill, which passed both Houses of Parliament, were that the dock trustees should number 28; the town dues to become the property of the dock trustees on the payment of £1,500,000; the dock trustees to take over £6,000,000 of corporate debt, that sum being the amount



Bidston Dock, looking East.

To-day the estate consists of:—616 acres of enclosed water; 38 miles of lineal quays; 1,443,530 square yards, or approximately 300 acres of transit sheds; 23 coaling hoists, cranes and conveyors—capacity 300,500 tons per hour; 11 hydraulic pumping stations; 6 impounding stations; 11 river entrances; 18 dry docks; warehousing for 180,000 casks of tobacco, 47,000 tons of grain, 150,000 bales of wool, 80,030 tons of general goods (the Board does not compete with outside warehouses, but rather provides special accommodation for commodities requiring the same); lairages with covered accommodation for 6,770 oxen, 22,000 sheep; 3 dockyards for the engineer; one buoy store for the Marine Dept.; 3 floating stages; railway passenger station; 2 Customs baggage rooms; covered accommodation for 6,000 coastal passengers; two jetties for discharge of oil, 118½ miles of railway lines.

In addition, the Board maintains a fleet of dredgers, surveying boats, salvage vessels, lightships, pilot boats, and other necessary floating plant.

On the Liverpool side of the river the Estate stretches some eight miles north and south, with the Dock Offices in the centre, and behind the line of docks are the many goods stations, warehouses, timber yards, offices, etc.

The Birkenhead docks, which are also under the control of the Port Authority, have been constructed inland for a distance of about 3½ miles.

Progress was also made on the Birkenhead side of the river, the initiative there being taken by prominent residents who made large purchases of land and proclaimed their intention of building docks. Some alarm was felt by those on the Liverpool side and subsequently the Liverpool Council, in 1828, bought 206 acres of land at a cost of £180,000, and at the same time intimated their intention of constructing docks on the Wallasey pool. Vigorous objections were forthcoming and the project was subsequently withdrawn. In 1843, the services of Mr. Rendel, an engineer, were obtained to prepare plans for the construction of docks, this being a secret move. The Liverpool Corporation was persuaded to sell land on the water's edge. These manoeuvres completed, the promoters secured powers in 1844 to convert the pool into docks. The Birkenhead Dock Company was formed and the Morpeth and Egerton Docks were opened in 1847. This scheme was not a financial success and in 1855 the Birkenhead property was purchased by Liverpool for £1,143,000. Meanwhile, a group of new docks had been constructed at the north end of Liverpool, provision being made on certain of them for special trades.

supposed to have been expended on harbour purposes. The Birkenhead Dock Estate was also made over to the new trustees together with the then outstanding debt of £1,400,000.

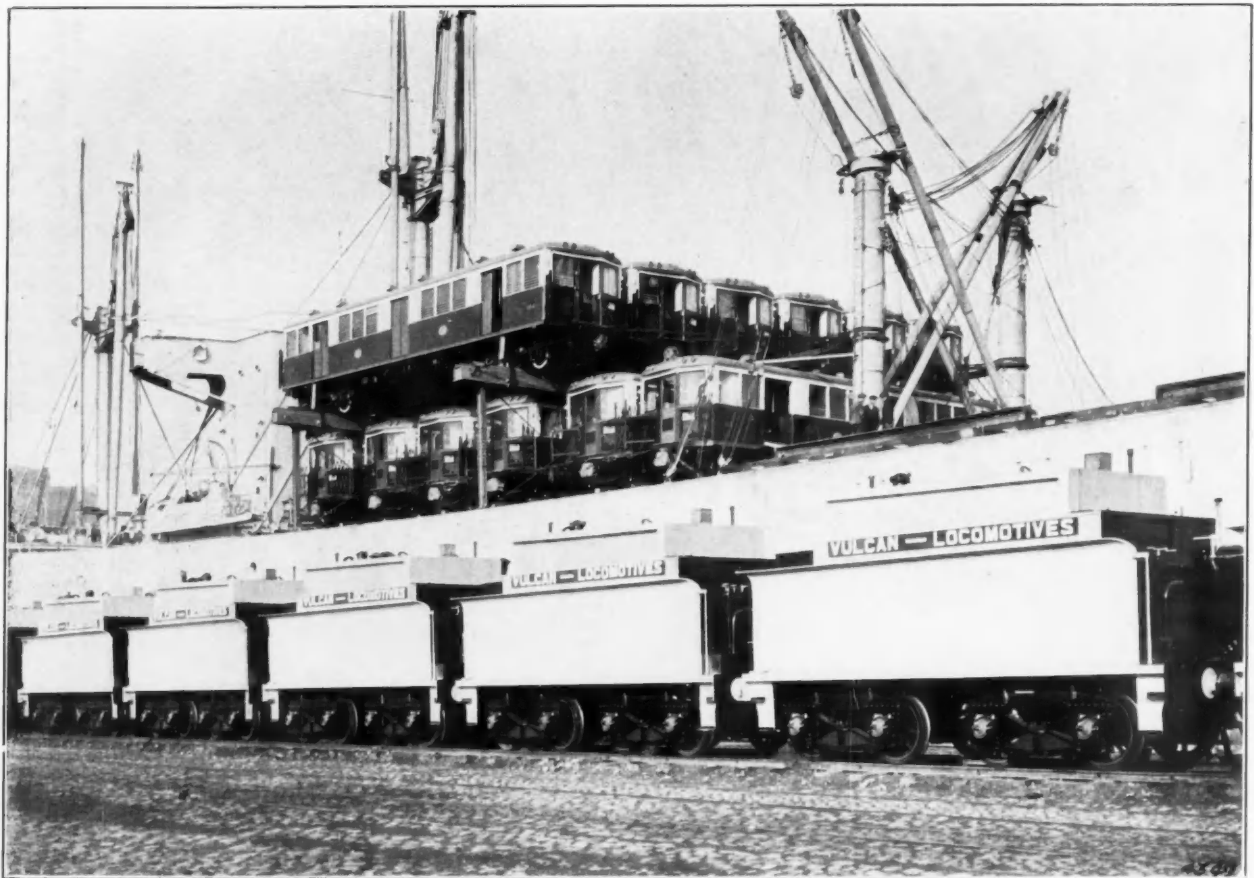
Twenty-four members of the Dock Board are elected by the dock ratepayers, i.e., persons who pay rates and dues on ships and goods only. The other four members are appointed by the Minister of Transport, in whom is vested the powers originally granted to the Mersey Conservancy Commissioners to make such appointments. Mr. Charles Turner was elected the first chairman of the newly-constituted Mersey Docks and Harbour Board on 5th January, 1858.

The Board exercises its functions through a number of committees formed from its own members, and then approves or disapproves of the committee's minutes or resolutions as they are submitted to the whole board. Each member belongs to two or more committees, themselves responsible for the activities of the department. These committees comprise:—Works, Finance, Docks and Quays, Traffic, Warehouse, Marine, Pilotage, Trade, Parliamentary and Staff. The general manager, as the chief executive officer, is responsible for executive action and for the co-ordination of the activities of these various committees. He is directly responsible to the Board.

Apart from the engineer-in-chief and the solicitor, the principal assistants of the general manager are:—(1) treasurer, under whose surveillance comes the check office and accountancy department; (2) harbourmaster, who is responsible for the dockmasters, piermasters, head gatesmen and dock gate men; (3) traffic manager, whose duties call for an oversight of railway superintendents, wharfingers, foreign animals wharf, district traffic managers, quay sweepers, weighing materials, survey of cargoes; (4) warehouse manager, whose personnel includes warehouse keepers, foremen, gangers, coopers, samplers, weighers, etc.; (5) marine surveyor, whose staff includes assistants, surveyors and draughtsmen, and whose department is responsible for the supervision of lightships, buoy stores, salvage staff, lighthouses and landing stages; (6) under the superintendent of pilotage come shore-masters, pilot boats, pilots; (7) finally, there are the traffic agents at London, Birmingham and Bradford.

The proceedings of each committee are watched over by a clerk from the general manager's dept. and not from a department immediately concerned. Thus the general manager automatically is kept in touch with all proceedings and is able to co-ordinate decisions of the different committees on

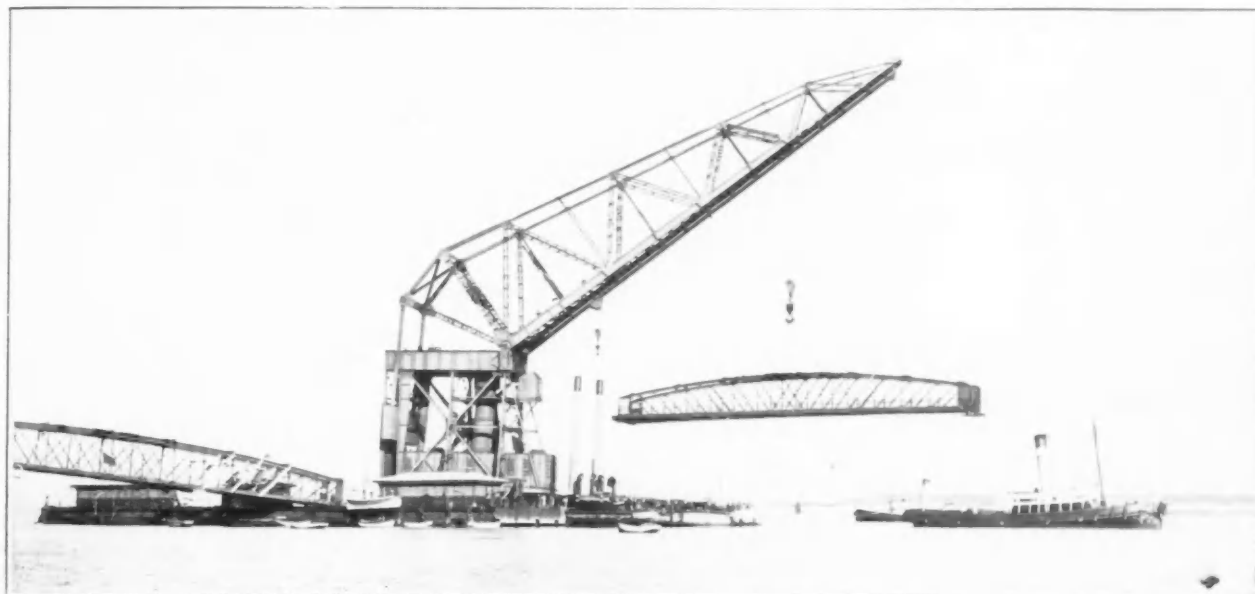
Port of Liverpool



Loading Locomotives and Carriages for the Far East.



Roof Crane on a Liverpool Dock Shed.

Port of Liverpool—continued

The 200-ton Floating Crane "Mammoth" lifting Bridge at Egremont Ferry (120 tons).

all questions when policy arises, and when matters affecting more than one committee are concerned.

As meetings of the principal committees and the Board are held once a week, prompt decisions are a matter of course. Whenever there are matters which affect other departments, resolutions are abstracted from the minutes and notified accordingly. In general, it may be said that the general manager's office, which also deals directly with general questions of labour, estate, bonds, interest warrants, etc., is a link between the Board and its various committees and the Board and the outside world.

Aims of the Board.

It is the aim of the Mersey Docks and Harbour Board to provide ample facilities for the ship and trader at reasonable cost; in other words, efficient as well as competitively economic service. Full opportunity is provided for private enterprise to display its resource in the discharge of certain functions, it being the policy of the port authority, for instance, to carry out but little of the actual operations of loading and unloading ships.

Although warehouses are provided for the storage of grain, tobacco, wool and general cargoes, the total warehouse accommodation of the port, including that for which private enterprise is responsible, is something like 2½ million tons. In the main, the Board's warehouses are used only for special commodities.

Tugs, grain elevators, barges and lighters are all provided by firms in the port.

It is believed that in no other port is master portage conducted on the same lines as in Liverpool. This function comes under the jurisdiction of the Board, which is responsible for the regulation and good government of the master porters—those who receive import cargoes from the ships' slings and

who are responsible for them until they are delivered to railway wagons, road vehicles, dock, river, canal or coastal craft.

The master portage system is governed by a series of by-laws and there is a fixed rate for every variety of commodity handled. The Board does not do any of the actual work of master portage, except in its closed warehouses and docks, but issues licences to master porters for their good government and fixes the rates for services they render. From time to time, the rates come under review and it is usual for the master porter interested and the trader concerned to make observations on the cost of the operations involved. Independent observations are also made by the Board before the final fixing of a rate. Thus, the Board holds the scale impartially and in a disinterested manner, but, at the same time authoritatively, to secure the recognition of rates equitable to all parties. Before a rate can become operative, it has to be approved by the Minister of Transport, to whom an appeal may be made against any decision reached by the Board.

A Cameo of Progress.

On the statistical side it may be said that there are few ports whose development can be expressed in such figurative form as the port of Liverpool. In the year 1752 the amount received in duties was the paltry sum of £1,776. No information is available as to the number of vessels which used the port at that time, but it is recorded that in 1757 the number was 1,371 and the amount paid in duties £2,336. By 1800 the number of vessels had increased to 4,746 of a tonnage of 450,460 tons, the amount paid in duties being £23,379. The rate of progress was steadily maintained, until in 1825 the number of vessels was 10,837 of 1,223,820 tons; the duties on the tonnage were £59,446 and on goods £69,245. From then onwards, the need for additional facilities became strongly emphasised, until in 1859 the number of vessels was 21,211, representing 4,511,969 tons, £187,489 was paid in dock rates on goods and £199,127 town dues on goods. There is no need, neither is there the space, in which to make a detailed analysis of returns for the intervening years, but, excluding the war period, it may be said that the traffic returns for the port of Liverpool have been exceptionally well maintained. The shrinkage in the number of vessels from 26,000 in 1905 to 17,499 in 1934 is explained by the larger type of vessel using the port, for whereas in the former period the tonnage was 15,936,000, in 1934 the figure was 19,969,000. In the year 1929 the Board had the record income of £2,598,464; the amount for 1934 was £2,205,199, a figure which had never been equalled prior to 1920.

Particulars for 1935 are:—total income, £2,462,970; number of vessels paying tonnage and harbour rates, 17,984; tonnage, 20,478,492; rates received on vessels, £1,505,549; rates received on goods, £957,421.

Gladstone Dock.

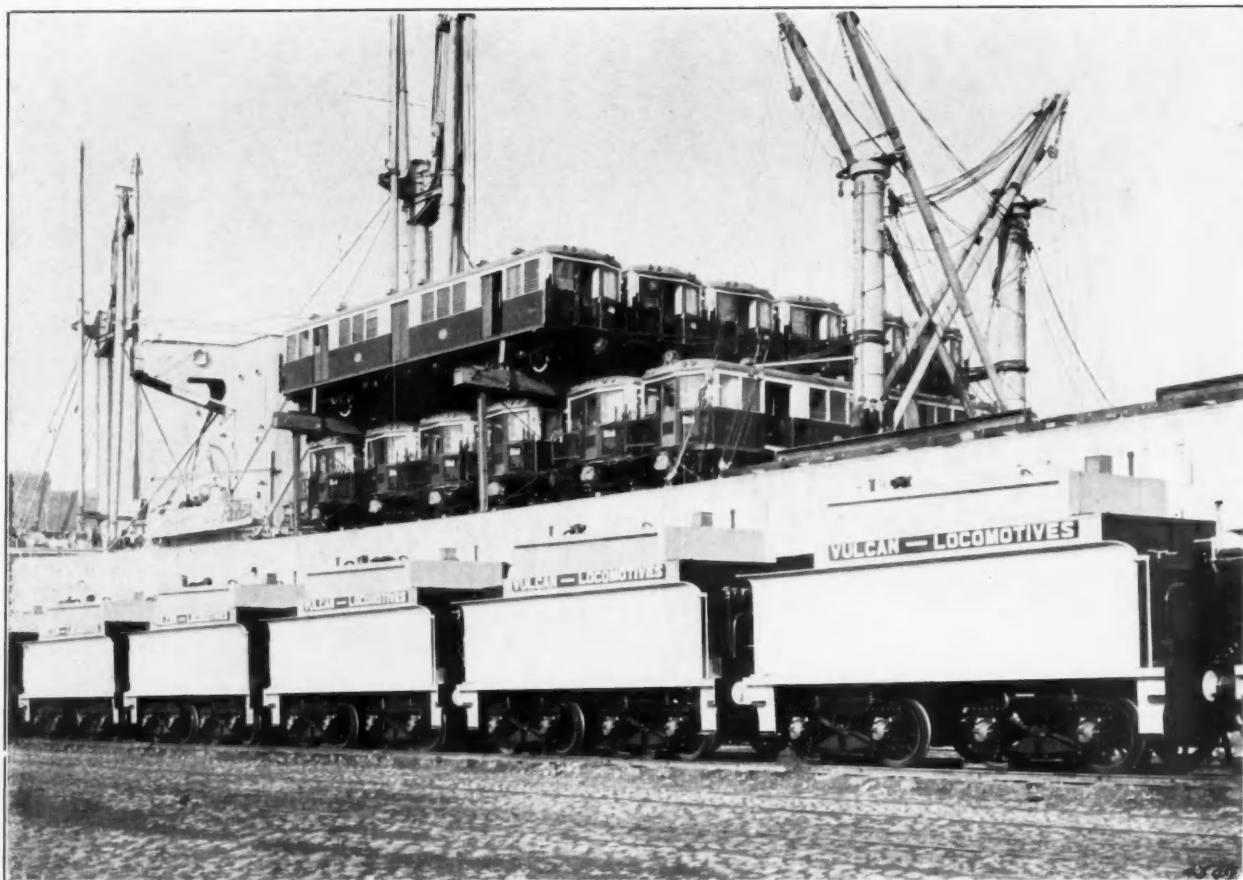
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S.S. "Transylvania" landing Passengers at Princes Landing Stage.

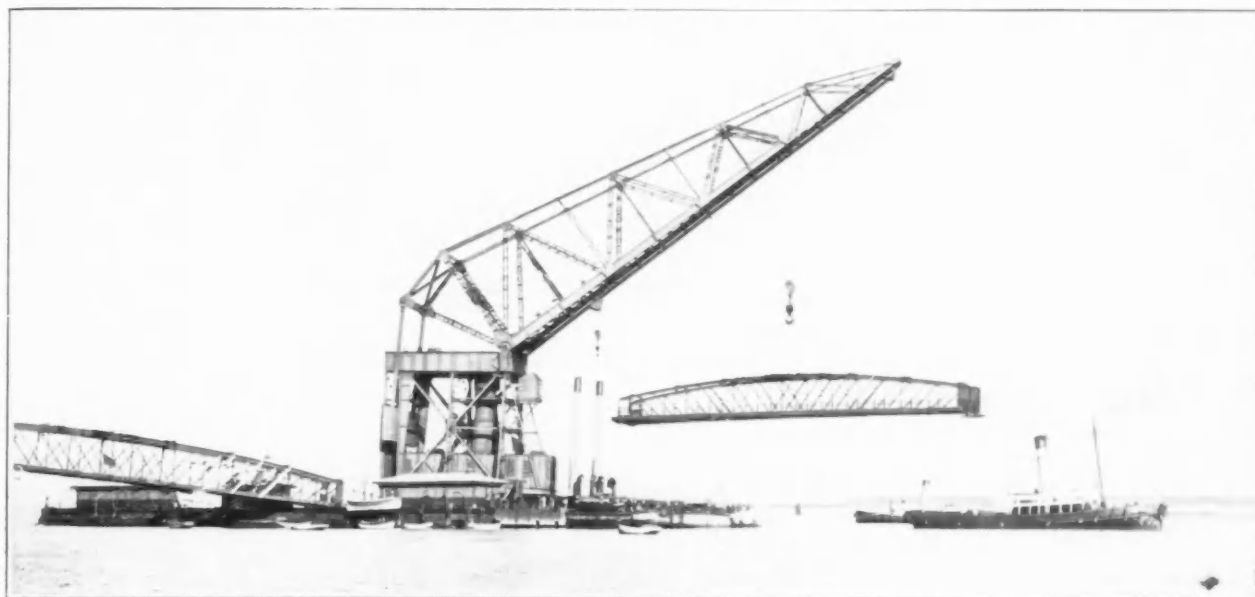
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S.S. "Transylvania" landing Passengers at Princes Landing Stage.

Port of Liverpool



Bidston Dock (Birkenhead) under Construction.



Cranes at North Carriers Dock, South Quay.

Port of Liverpool—continued

Opening of new Trafalgar Dock, showing the new Bascule Bridge (weight 680 tons).

scheme to provide for the construction of a group of docks to accommodate the largest vessel afloat with a liberal margin for possible increases in size.

In 1910, a start was made on a combined wet and graving dock in advance of the principal general scheme. Accordingly, the Gladstone Graving (and Wet) Dock, which is one of the largest dry docks (1,050 ft. in length) in Europe, was built at a cost of nearly £500,000 and was opened in July, 1913. This dock has a width of entrance and passage of 120-ft.; the sill below bay datum is 15-ft.; water area, 3 acres 2,585 yards; lineal quayage, 585 yards. Here there are four 13-cwt. electric quay cranes of a portable type and a movable steam crane with a lift of five tons.

Salient features of the Gladstone Dock system are:—

	Position and Width of Entrance or Passage		Sill below Datum		Water Area		Lineal Quayage	
					Acres	Yds.	Miles	Yds.
Gladstone Dock ...	...	...	—	—	24	3464	0	1285
" Branch Dock No. 2	...	...	—	—	11	3950	0	945
" " No. 1	...	...	—	—	13	520	0	1013
" Lock, 1,070 ft. long ...	South	Ft. 130 Ins. 0	Ft. 20 Ins. 0		3	1427	0	790
" Hornby Lock, 645 ft. long ...		89 3	10 0		1	2200	0	467

At Branch Dock No. 2, north shed, there are nine 3-ton roof cranes on the quayside and six 20-cwt. roof cranes on the road side; south shed, ten 3-ton roof cranes and six 20-cwt. roof cranes. At Branch Dock No. 1, north shed, there are ten 3-ton roof cranes and six 20-cwt. roof cranes; south shed, twelve 3-ton cranes of the portal type movable on a track laid at the quay level and five 20-cwt. roof cranes on the road side. In addition, there are two 5-ton steam cranes (movable) available.

Railway connections with all the Gladstone Dock sheds are ample and there is every convenience for motor transport.

From the engineering standpoint, the outstanding feature of the Gladstone Dock system is the great lock. It is 28 feet wider than any vessel afloat and is 150 feet longer than any vessel yet built. In the river Mersey there is a tidal range of 30 feet and until this new lock was built the docking and undocking of vessels was generally confined to two hours each side of high water. Such is the depth of this lock, that to-day a vessel drawing say 27 feet can be docked at the state of any tide during the year. What this means to the shipowner

anxious to secure the quickest possible turn-round of his liners, can readily be imagined.

Another point with reference to the Gladstone Dock deserving of mention is that in place of shoring up a vessel in the graving dock, when the water is pumped out, the vessel is held in position by means of hydraulically worked bilge blocks which take against the vessel's bottom and she then sits as in a bed. It is an arrangement which, apart from its expedition, saves a great deal of labour.

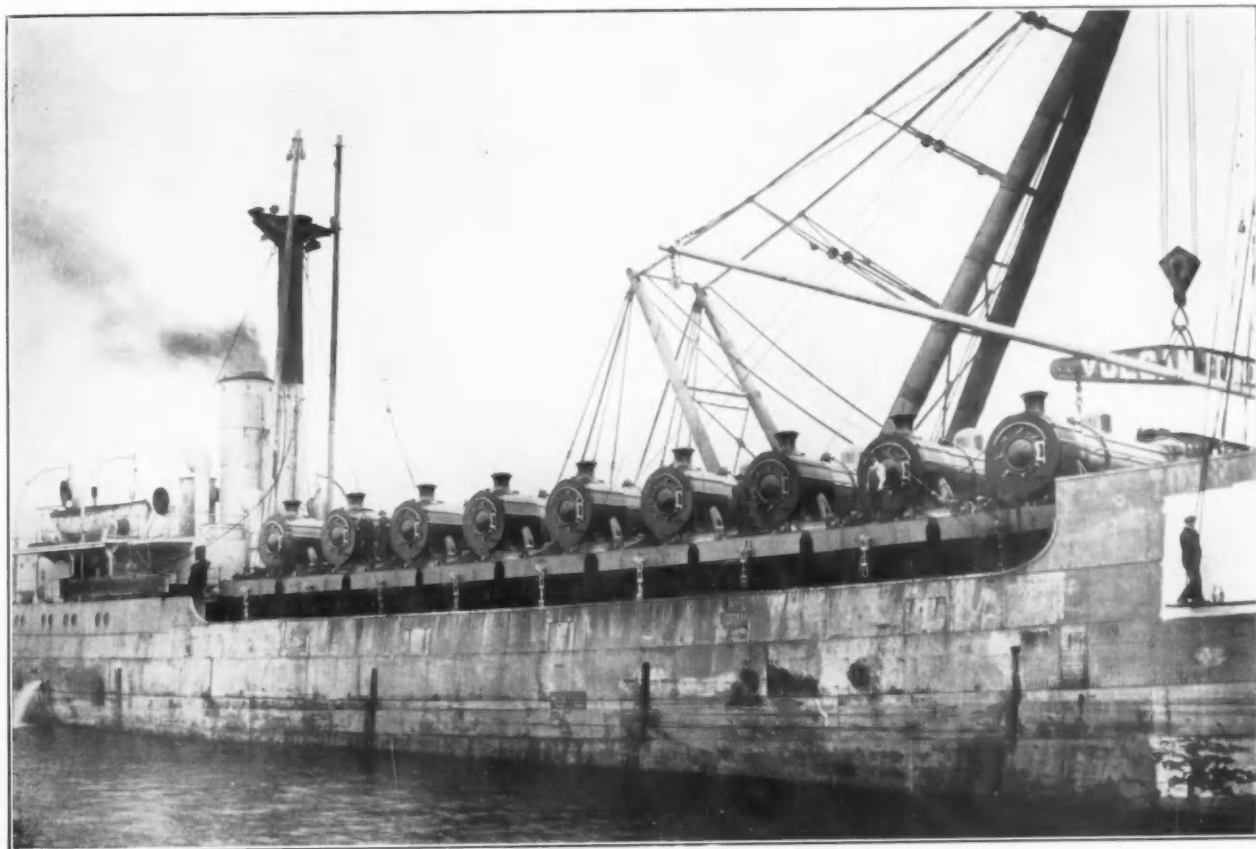


Discharging Log Timber.

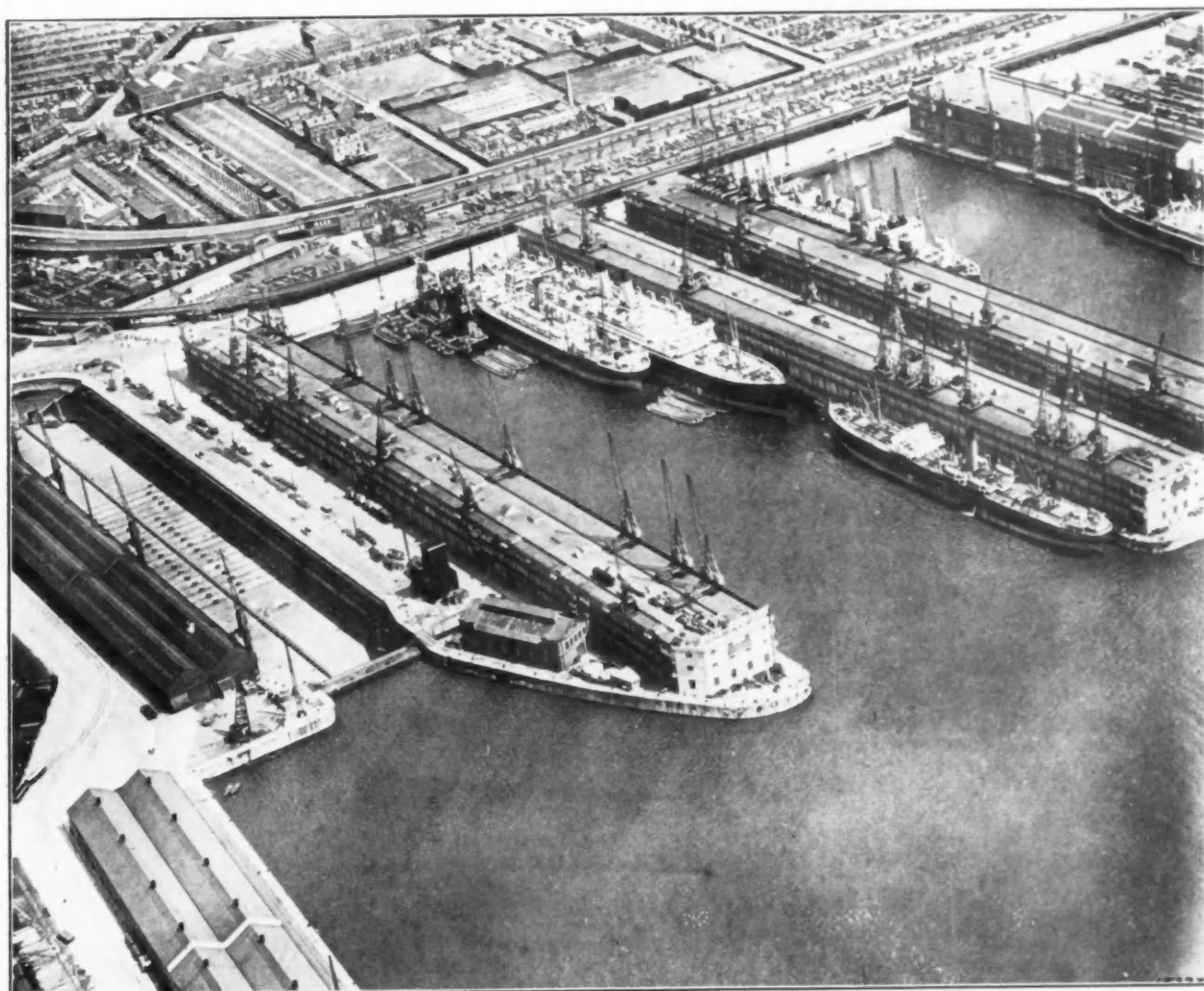
Liverpool Dock System.

Within the space available it is not possible to make a detailed review of each dock and its equipment *in seriatim*. Bare particulars must therefore suffice. Here is a list of the docks starting from the north end and travelling southward.

Port of Liverpool



Shipment of Locomotives for Indian Railways.



Gladstone Docks and Graving Dock.

Port of Liverpool!—continued*Alexandra Dock and Grain Silos.*

hydraulic hoist and one fixed hydraulic hoist, each capable of slipping end-door wagons up to 22½ tons gross at a rate of 300 tons per hour. Other equipment at the West Float available for general use includes an 87-ton steam crane, eight 5-ton electric cranes, one 3-ton hand crane, and one 27-cwt. hydraulic crane.

Besides these, there is at the East Float for coaling purposes a fixed hydraulic hoist capable of shipping end-door wagons up to 20 tons gross at a rate of 200 tons per hour, and three hydraulic tips for loading flats.

Vittoria Dock, Birkenhead, is used by the steamers of the Ocean Steamship Company and the China Mutual Steam Navigation Co., Ltd. This dock has a water area of 11 acres 467 yards, a lineal quayage of 1,192 yards and 100-ft. entrance.

The Wallasey Dock and Passage have a water area of 13 acres, 1,295 yards of lineal quayage, and an entrance 49 feet in width. This dock is used in connection with the discharge of grain-laden vessels and for general purposes.

Egerton Dock is one of the smaller docks, having a water area of 4 acres 469 yards, a lineal quayage of 704 yards and a width of entrance 69-ft. 9-ins.

Morpeth Dock has a water area of 11 acres 2,404 yards, lineal quayage 1,299 yards, west entrance 69-ft. 9-ins., whilst the lock, 398 feet long, at the east has an entrance 85 feet wide. The water area of the lock is 3,777 yards and the lineal quayage 441 yards. There is a smaller branch dock at Morpeth having a water area of 4 acres 243 yards, a lineal quayage of 637 yards, and an entrance width of 84-ft. 9-ins.

It should be noted that the water in the Birkenhead Docks is maintained at a level generally not less than 30 feet above Liverpool bay datum, by pumping from the river.

Of the Birkenhead docks, Bidston, which has a water area of 10 acres 3,354 yards and a lineal quayage of 867 yards, has undoubtedly great potentialities, there being available useful factory or warehouse sites with easy access to main railway systems. The Mersey Docks and Harbour Board have recently let a portion of the land for the storage of timber. A quay with crane track, timber lines, etc., is now in course of construction on the north side.

Recent Improvements.

Brief reference is warranted to recent costly schemes of improvement carried out by the Board. One of the most important of these has been the modernisation of the Central Docks, involving the demolition of the Clarence Half-tide Dock and contiguous docks and the construction of the new Trafalgar Dock with single-storey sheds, roadways and railway sidings, also the improvement of the Clarence Graving Docks, widening and deepening of an existing passage and the construction of a new and improved passage between the new dock and the Salisbury Dock, together with two electrically operated bridges of the rolling lift type.

New bridges have also been placed across dock passages on both sides of the river. These bridges are electrically operated and are of the rolling lift type. They are remarkably cheap to operate.

Arrangements have been made whereby it is now possible for out-of-gauge or exceptional loads to be conveyed by railway or hauled direct from the Alexandra Dock Station of the L.M.S. system to the East Quay of the Langton Dock, and there lifted by floating cranes for shipment in any docks. This is an additional berth for dealing with this class of traffic.

Improvements at Alfred Dock, Birkenhead, cost £1,300,000. The old river entrance locks were replaced by a new 80-ft. lock having three pairs of steel dock gates. The sill of the new lock is constructed at a depth of 12 feet below bay datum, providing a depth of water of 40-ft. 4-ins. at high water on ordinary spring tides as compared with a depth of 36-ft. 7-ins. in the case of the 100-ft. Alfred Lock. The 50-ft. and 30-ft. passages between the Alfred Dock and the East Float were also closed and there was substituted therefor an 80-ft. passage having a depth of 5 feet below bay datum. Thus, there was given a passage with a depth of water at high water on ordinary spring tides of 30-ft. 4-ins. as compared with 27-ft. 4-ins. before.

Constant additions and improvements have been made to plant on both sides of the river.

Depth of Sills and Width of Entrances.

The Liverpool bay datum is 10 feet below the old dock sill, or 14.67 feet below ordnance datum.

Port of Liverpool—continued

Here are a few particulars giving the depth of sills at ordinary dock river entrances in relation to the ordinary tides:

- Impounded level of Birkenhead floats, 30 feet.
- High water ordinary springs, 28 feet 4 inches.
- High water ordinary neaps, 22 feet 9 inches.
- Lowest high water ordinary neaps, 18 feet 7 inches.
- Mean tide level, 15 feet 2 inches.
- Ordnance datum, 14 feet 8 inches.
- Old dock sill datum, 10 feet.
- Average low water ordinary neaps, 7 feet 6 inches.
- Dukes Lock, 6 feet.
- Canning, half tide, south, 3 feet 10 inches.
- Salisbury north, 3 feet 5 inches.
- Princes half tide, middle, 2 feet 3 inches.
- Princes half tide, north 2 feet, south 1 foot 11 inches.
- Average low water ordinary springs, 2 feet.

Liverpool Bay Datum.—0.

- Herculaneum, north, 1 foot.
- Langton Lock, west, 1 foot 5 inches.
- Morpeth Lock, 1 foot 8 inches.
- Canada Lock, 3 feet 6 inches.
- Sandon half tide Lock, middle, 5 feet 7 inches.
- Alfred Lock, north, 8 feet 3 inches.
- Brunswick Lock, north and south, 9 feet.
- Sandon half tide, north and south, 10 feet 1 inch.
- Alfred Lock, south, 12 feet.
- Gladstone Lock, 20 feet.

Having now referred to the depths of the dock entrances, it is appropriate to deal now with the increases in width, for with a closed dock system there is probably no other feature in dock construction which shows so clearly the development necessary to meet the growing demands of ships, owing to increased size. In dock building, one must look ahead and anticipate the reasonable demands occasioned by the building of larger ships.

If we go back to the old dock entrance of 1715 we find the width was then only 30 feet; in 1788, King's Dock entrance east, width 50 feet; in 1868, the width of the Princes half-tide dock entrance was 65 feet. In 1878 the largest ship using the port was 4,500 tons. This was berthed at the Langton Dock, which had an entrance 65 feet across, and it was then calculated that this width would be sufficient for a vessel of 10,000 tons. Canada Dock in 1895 was provided with an entrance width of 100 feet. Sandon half-tide entrance was constructed in 1901 for a vessel of 30,000 tons, although the largest vessel then using the port was 10,000 tons. To-day, the largest vessel visiting Liverpool is 27,000 tons, but the Gladstone Dock will take one of 70,000 tons. The Gladstone river entrance lock was built in 1927 and is 130 feet in width.

In the planning of the Dock Estate, cognizance has been taken of the need for the provision of ample facilities for the quick turn-round of steamers. It must be remembered that there are many regular lines to and from the port. Quayside equipment must be and is efficient and up-to-date to deal with a variable tonnage of cargo, inward and outward, within

extraordinarily wide limits, so that the time spent by the liner in the port is cut down to the lowest possible limit. A vessel may have 5½ working days in Liverpool bringing in mails and passengers with say, 7000/8000 tons of cargo. As soon as this has been cleared, outward freight is taken aboard, probably 5000/6000 tons, and then there are the operations of revictualling, coaling, oil, and the embarkation of passengers, mails, etc. These services are maintained with time-table regularity, which is only possible in a well-ordered port.

Graving Docks.

There are 21 graving docks on the Liverpool Dock Estate. Reference has already been made to the Gladstone. The others are shown in Table 1 below.

At the Graving Docks the following cranes are provided:—Langton—one 30-ton movable hydraulic, two 2-ton and one 5-ton hand; Brocklebank—one 3-ton hand; Canada—one 40-ton movable, and one 30-cwt. hydraulic; Princes—two 2-ton hand; Herculaneum—one 5-ton and two 30-cwt. hydraulic.

Birkenhead Graving Docks are shown in Table 2 below. New electrically-driven pumping machinery has recently been installed at these graving docks.

Equipment.

Cargo handling plant and equipment has been, and probably always will be, one of the problems of dock management. A modern plant of cranes is a first necessity and after that a useful range of electric trucks for service in the dock sheds and on the quays.

Since the electrification of the Estate, all new cranes are electrically operated. Cranes for heavy lifts are no longer provided on the quays, since it suits the shipowner better to bring the crane to the ship rather than the ship to the crane. Moving large vessels in docks may be both costly and undesirable, but by means of a floating self-propelled crane the lift can be picked up at many points in the docks and can be brought alongside the vessel which is to take the lift as and when convenient.

Amongst the cranes available at the Mersey Docks are:—184 hydraulic cranes ranging from 10 cwt. to 40 tons; 122 electric cranes ranging from 20 cwt. to 15 tons; eight hydraulic jiggers of 20 cwt. power each; seven steam cranes ranging from 5 to 87 tons; one steam crane, 15 tons (with hand-power also); 18 hand cranes ranging from 30 cwt. to 15 tons. The cranes at the High Level Railway and the 29 tons and 25 tons hydraulic cranes at Herculaneum Dock are specially provided for the shipment of coal, but may be used for general cargo purposes when available. In addition to the foregoing there are available for the use of the public seven portable steam cranes ranging from 25 to 50 cwt., eleven portable electric cranes ranging from 7 to 24 cwt., and one electric runabout crane, 8-15 cwt.; also the following

TABLE 1.

Name and Position	Width of Entrance	Sill below Bay Datum	Sill above Bay Datum	Coping at Hollow Quoins above Datum	Length		Total Length	
	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.
Gladstone	120 0	15 0	—	43 0	—	—	1050	4
Langton, No. 1 (South) ...	Outer ... 60 0	—	4 6	37 0	451 10	—	—	—
	Inner ... 60 0	—	4 5	32 0	500 9	—	—	—
,, No. 2 (North) ...	Outer ... 60 0	—	4 6	37 0	500 10	—	—	—
	Inner ... 60 0	—	4 4	32 0	451 11	1905	4	—
Brocklebank	93 3	2 9	—	37 0	—	—	799	5
Canada	94 0	2 11	—	38 0	—	—	926	0
Clarence, No. 1 (North) ...	52 0	—	6 0	37 0	443 10	—	—	—
	Outer ... 45 0	—	7 6	37 0	270 0	—	—	—
,, No. 2 (South) ...	Inner ... 32 9	—	9 11	30 6	286 3	1000	1	—
Princes	41 9	—	8 1	38 0	—	—	283	9
Canning, No. 1 (North) ...	35 3	—	13 1	33 9	436 10	—	—	—
	,, No. 2 (South) ...	35 0	11 0	33 8	482 8	919	6	—
Queens	80 0	6 2	—	38 0	—	—	634	0
Herculaneum, No. 1 (West) ...	60 0	—	6 8	36 6	759 5	—	—	—
	,, No. 2 ...	—	6 9	36 6	934 9	—	—	—
,, No. 3 ...	59 6	—	6 7	36 7	768 10	—	—	—
,, No. 4 ...	80 0	—	2 7	36 10	754 1	3217	1	—
Total Length of the Liverpool Graving Docks					—	—	10735	6

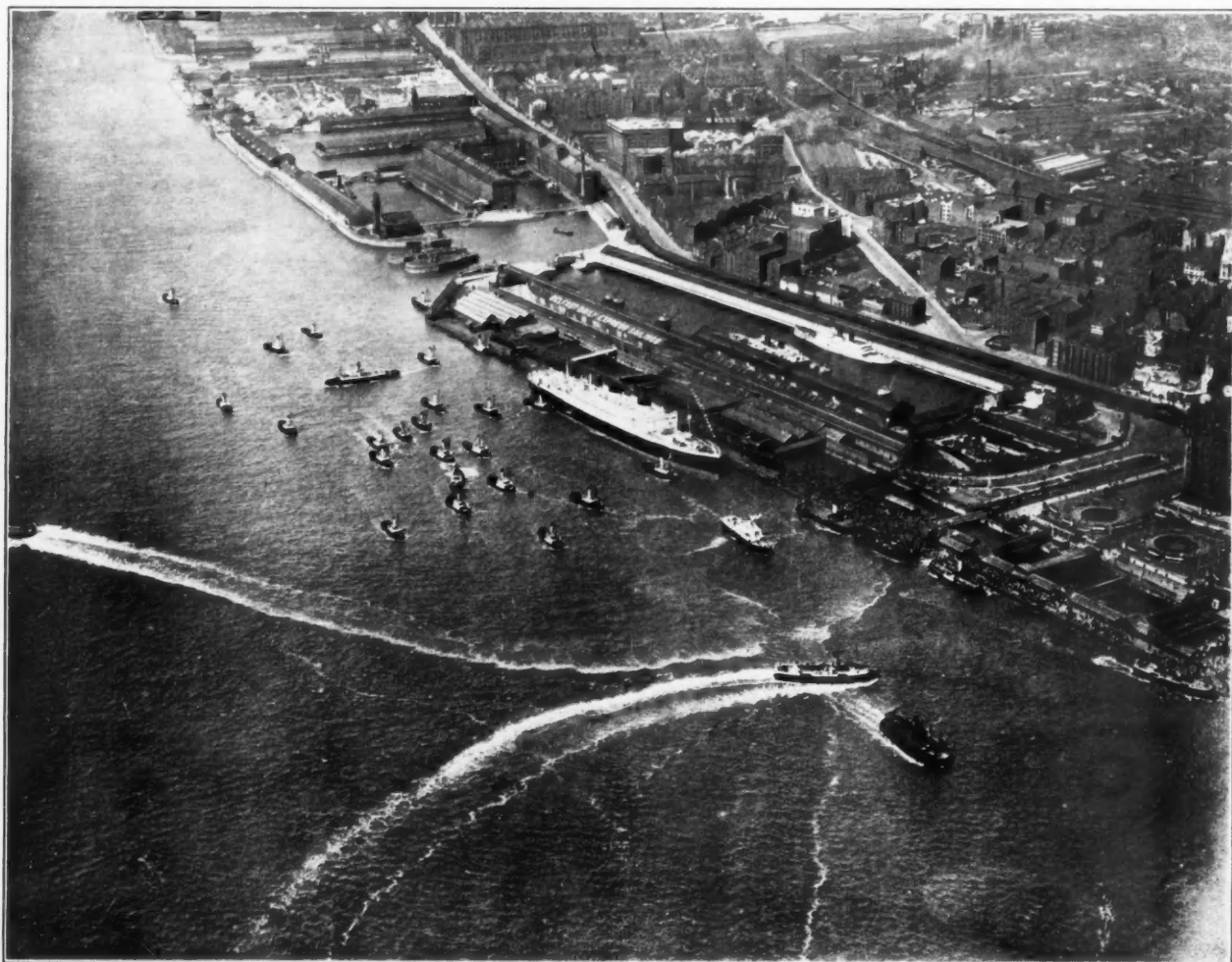
TABLE 2.

Name and Position	Width of Entrance	Sill above Bay Datum	Coping at Hollow Quoins above Datum	Length		Total Length
	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	
West Float, No. 1 (East) ...	59 6	5 11	35 0	939	0	—
,, No. 2 (Middle) ...	48 6	2 4	35 0	750	7	—
,, No. 3 (West) ...	85 3	3 4	35 0	750	6	2440 1
The Total Length of the Birkenhead Graving Docks					—	2440 1

Port of Liverpool



Oil Pipeline Gantry at East Side, Herculaneum Dock.



Liner at Landing Stage.

Port of Liverpool—continued

floating cranes:—"Titan," for loads up to 25 tons; "Samson," for loads up to 30 tons; "Hercules," for loads up to 50 tons; "Atlas," for loads up to 100 tons; "Mammoth," for loads up to 200 tons.

The last-mentioned, the "Mammoth," is a crane jib of the luffing type and can be swung, with suspended loads, through a complete circle. All crane movements are electrically driven. Ample deck space is provided for all classes of loads. The vessel is self-propelling, having a speed of from 5 to 6 knots in still water.

At Herculanum Dock, which is used as a vestibule dock for vessels passing to the branch docks and graving docks, and the Harrington and Toxteth Docks, there are two movable hydraulic coaling cranes, capable of shipping end-door wagons up to 22½ tons and 19 tons gross respectively and each capable of shipping 300 tons per hour. The cranes can also be used for ordinary lifts up to 25 tons and 20 tons, respectively, when available. There is also a fixed hoist for coaling flats only, capable of shipping end-door wagons up to 23 tons gross, at a rate of 100 tons per hour. In addition, there is an ordinary hand crane of 15 tons capacity.

For general use on the dock estate there is a number of portable steam cranes ranging from 25 to 50 cwt., and portable electric cranes ranging from 7 to 24 cwt.

Dock Engineer's Department.

Mr. T. L. Norfolk is the engineer-in-chief and the principal of a large staff engaged on repairs and maintenance work. Conservancy also comes within his purview.

Work is still in progress in connection with the raising of the Taylor's Bank Revetment to its original height of 5 feet above Bay datum. Last year, 38,451 tons of stone were deposited, making a total of 212,288 since the commencement of the work.

As regards the Crosby East Training Bank, this is standing well and is being maintained at the stabilised height of about 6 feet above Bay datum; the amount of stone deposited since the commencement is about 770,000 tons, whilst the quantity deposited for the Crosby West Training Bank is 1,085,255 tons of stone and 1,346,151 tons of clay. Work has also been done on 2 other training banks—Askew Spit and Queens North.

Heavy work devolves on the sand pump dredgers, "Hilbre Island," "Coronation" and "Burbo," which are operated to move sand from the bar and shoals in the Queens and Crosby Channels. Here is a summary of their work during the last completed year:—

	Bar Tons	Queens Channel Tons	Crosby Channel Tons	Total Tons
"Hilbre Island" ...	9,380	2,613,960	1,804,460	4,427,800
"Coronation" ...	55,510	1,023,610	137,900	1,217,020
"Burbo" ...	7,210	1,667,120	799,060	2,473,390
	72,100	5,304,690	2,741,420	8,118,210

The quantity of sand removed from the Bar since the commencement of dredging there in 1890 is 104,711,260 tons and from the shoals in Queens and Crosby Channels 381,471,020 tons, making a total of 486,182,280 tons.

The sand pump dredgers have also worked part of their time at the Brunswick river entrances, South Dingle jetty and at the entrance to the Garston channel. The "Coronation" removed a small quantity of sand from the river, adjacent to the Georges Stage. The total quantity of sand so removed from these positions during the year was 3,197,750 tons.

In addition, bucket ladder dredgers have worked at the Brunswick river entrances during a portion of the year and removed 437,428 tons of sand.

Before dredging was commenced in 1890 the depth of water on the Bar at low water of spring tides was only 11 feet, while now there is under the same conditions about 25 feet.

The space over which dredging has been carried on at the Bar measures about 8,000 feet by 2,000 feet wide, the latter being the average width of the buoyed channel through the bar. Vessels can come over the Bar practically at any state of the tide, and proceed direct via the Queens and Crosby Channels into the Mersey, and, if they be passenger liners, go alongside the landing stage and disembark their passengers.

Towards the close of the year 1906, the Board, in order to prevent the erosion of the concave bend on the south side of Taylors Bank in the Crosby Channel, and the corresponding northward extension of the Askew Spit, decided to "revet" that side of the said bank with stone. The work consists in the deposit along the southern face of Taylors Bank, above and below low water level, and well outside the channel, of a layer of small lumps of hard stone in such manner as to revet or clothe its slope, and to protect the underlying sand from erosion. By these means the channel has been made straighter and more easily navigable by large vessels. The original length of the revetment, which was commenced early in 1909 and completed in November, 1910, was about 2½ miles. Since then

it has been found necessary to extend it at its seaward end. The construction of similar training banks in Crosby and Queens Channel is also in hand.

Marking and Buoying.

Mersey Docks and Harbour Board is responsible for the marking, buoying and lighting of channels leading into the River Mersey. The boundary between the ports of Liverpool and Preston is defined in the Ribble Navigation Act, 1896, as "an imaginary line drawn in a true north-west direction from the inner north-west seamark on the beach at Formby Point, shown on the Admiralty chart of the survey of the West Coast of England from Formby Point to Kirkcudbright, published the 23rd day of October, 1893, until such line intersects the seaward boundary of the Port of Liverpool."

Four lighthouses, situated at Port Lynas, Ormes Head, Rock and North Wall, are operated. Port Lynas lighthouse, off the Anglesey coast, is 52 miles distant and is the station for the outer or western pilot boat. It is also a signal station. Only one of the four lighthouses is manned, the others being equipped with acetylene cylinders which are replaced annually. These three unmanned stations have a "light valve" equipment, by means of which the gas is automatically turned on every evening and off each morning, leaving only a small pilot light burning during the day.

Of lightships there are three, located at important points in the channel. The Bar lightship is claimed to be one of the most powerful and best fitted lightships in the world. Her illuminant is incandescent vaporised petroleum through lenses, emitting a total ray of 40,000 candles. She has an electric submarine oscillator and a fog siren the latter actuated by compressed air. The submarine oscillator sends out under-water signals which can be heard by ships at a distance of about 20 miles. She is also fitted with a wireless beacon which sends out aerial signals having a minimum range of about 50 miles. During foggy weather synchronous wireless beacon and oscillator signals are transmitted. These signals enable her position to be located in fog so that vessels fitted with receivers can approach the port with confidence, thereby saving valuable time.

Each lightship, the Dock Office and one of the Board's salvage and surveying tenders has a radio transmitting and receiving set, so that they are enabled to report the movements of buoys or changes in soundings in the channels, also the arrival and departure of vessels and to pass orders from owners to their vessels inward and outward, which, of course, facilitates business.

In the main channel and in other channels some of the buoys show flashing red lights on the port hand entering and flashing white lights on the starboard hand entering, the lights being visible for about four miles, whilst those on the boat beacons have a visibility of about ten miles. All the beacons and the more important buoys carry their lights about 30 feet above the water and are easily distinguishable from the bridge of a large vessel. There are 109 buoys and boat beacons in the Liverpool district.

Pilotage Service.

Four pilot vessels are in regular service, the personnel being specially trained. Candidates for pilotage positions start as boat hands and have to perform 18 months' foreign going sea service and obtain a second mate's certificate. When qualified to act as pilots, generally about the age of 24, they are put into the lowest grade and are expected by good service to graduate until they become first-class pilots.

At one time—and one is now going back 40 years—twelve sailing boats were in use. Then the Board decided to modernise the service by introducing two steam pilot boats on the stations. Subsequently, the sailing cutters were disposed of. In addition to the four steam pilot boats now in use, a motor launch is used for river work.

Salvage Operations.

One of the important duties that comes under the surveillance of the Marine Surveyor and Water Bailiff is the removal of vessels, wrecks which obstruct the free passage in the channels leading to the port. Under the powers of the Dock Board, the Marine Surveyor is authorised to take over completely any vessel with its cargo which obstructs navigation. After paying the Board's expenses, the residue of the values salvaged is handed over to those legally entitled to it. The arrangement seems to work very smoothly. The department, of course, has an efficient plant and it has had some very difficult jobs to perform.

Liverpool Landing Stage.

Liverpool Landing Stage, which is used by ocean-going liners, coastal steamers and ferry boats, has a total length of

Port of Liverpool—continued

2,534 feet. The stage is a floating structure carried on about 200 iron pontoons, each of them being about 800 feet long, 10 feet wide and 6 feet deep. The bridge is held in position by a number of bridges and booms connected with the shore and stage by swivel joints and by mooring chains, the shore ends of which are in the river wall. The range of the tide is considerable, being as much as 34 feet on an extreme spring tide.

The level of the deck of the stage is about 8 feet above the water level. The main bridges are about 110 feet long and their incline to the shore is practicable for pedestrians at all states of the tide.

For vehicular traffic a floating bridge of special construction, 540 feet in length, is built to give convenient access to the cross-river luggage boats and to the coastal and cross-channel steamers and ocean liners.

Movable gangways and high level bridges adapted to the high decks of passenger liners are used when occasion demands. Mechanical conveyors are put into service for the transfer of luggage from the steamers to the shore.

Customs baggage examining rooms, buffet, booking offices, post office, refreshment rooms, shipping offices, etc., are in close contiguity.

Port Warehouses.

Warehouses owned and operated by the Dock Board had an income of £385,623 in the year which ended on 1st July, 1934. The names of these establishments are:—Albert, Stanley, Wapping, Wool, Love Lane, Waterloo, Brocklebank, Birkenhead Grain, Composite, Wallasey, Birkenhead and Morpeth.

The largest of these establishments is the Stanley Dock Tobacco Warehouse, which has a total floor area of about 36 acres. East Waterloo Dock Grain Warehouses have a capacity for about 30,000 tons of grain, whilst those on the north side of the East Float, Birkenhead, which are fitted with hydraulic and electric machinery, lifts, bands, elevators, etc., can hold 31,000 tons. There is storage room at the East India Wool Warehouse for 160,000 bales of wool and on one floor alone 37,000 bales can be placed on show at one time.

At Alexandra Dock, the Union Cold Storage Company has one of the largest and most up-to-date stores in Europe with every modern device to ensure the expeditious transport of goods from the steamer to the cold rooms. Cold storage accommodation at the port is about 60,000 tons.

To sum up, it may be stated that there is grain storage for 260,000 tons; oil and spirit, 230,000 tons; general produce, 1,670,000 tons; tobacco, 95,000 tons, and wool 32,000 tons.

Oil Storage.

A considerable area of land at the south end of the Liverpool Dock Estate has been set aside for use by oil trade. Here, several of the leading companies have erected oil storage tanks, with a storage capacity of approximately 139,000 tons. These tanks are connected by means of pipes with a jetty, known as the South Dingle Jetty, which has been constructed by the Board in the River Mersey adjoining the said land, and is used exclusively for the discharge of vessels importing oil and spirit and for the subsequent delivery of such oil, etc., into ships or barges without the vessels having to enter dock. A second jetty, known as the North Dingle Jetty, is available for small craft. The installations are also connected by means of pipe lines with the Herculeum Branch Dock, thus providing an alternative method of receiving oil (other than spirit) from importing vessels or of delivering it for distribution by water. Good facilities for distribution by rail and road are available. All petrol in bulk discharged from vessels in the port must be dealt with at the Dingle jetties.

Garston Docks (L.M.S.).

London, Midland and Scottish Railway Company is responsible for the administration of the Garston Docks and Estate, this being situated about four miles south of the Liverpool Docks. The accommodation here comprises:—Stalbridge Dock—width of entrance 65 feet, water area 14½ acres, berthing space 3,170 feet; North Dock—width of entrance 55 feet, water area 8 acres, berthing space 2,400 feet; Old Dock—width of entrance 50 feet, water area 6 acres, berthing space 2,160 feet.

Over 85 acres of storage ground are available here for timber storage and special accommodation has been provided for heavy logs, travelling cranes being used capable of piling the logs to a height of 30 feet. Coal shipments are conducted night and day. Garston being a railway-owned port, goods are transferred direct from the ship to railway wagons or *vice versa*, thus reducing handling and obviating costly carriage.

At Stalbridge Dock there are four portable electric luffing grab cranes of 7 tons capacity, 11 portable hydraulic cranes

with lifting capacity of 50 cwt., and two portable hydraulic cranes with lifting capacity of four tons. The most up-to-date coaling facilities have been provided, including four movable hydraulic tips, each of 30 tons capacity and fitted with anti-breakage appliances and end doors on shoots mechanically controlled by an operator. The four tips can be operated simultaneously into the same vessel.

North Dock has sheerlegs 40-ton capacity, 14 hydraulic cranes with lifting capacity of 30 to 50 cwt., and two movable hydraulic coaling tips, each of 30 tons capacity. There are also four fixed high level tips of less capacity.

At the Old Dock there are 15 portable hydraulic cranes and three fixed high level coaling tips.

There are 90 miles of sidings at the port, of which eight miles are actually on or alongside the quays and are therefore available for the direct working of cargoes from the ship's side to trucks, or *vice versa*.

It might not be inappropriate to mention here that the shipping berths, both on the Liverpool and on the Birkenhead sides of the river, are excellently served with railway facilities.

Running the entire length of the Liverpool Dock system there is a double railway track, privately owned by Mersey Docks and Harbour Board. This line connects with the great goods stations which are on the other side of the Dock Road.

What it Costs to Run Liverpool.

Mersey Docks and Harbour Board has authorised borrowing powers for £48,182,500. The debt on 1st July, 1934, stood at £38,812,557 and sinking fund at £6,063,516.

Whilst on statistics, this might be the most appropriate time at which to discuss what it costs to operate a port with such widespread ramifications as Liverpool.

First of all, under the heading of Revenue Account we find that rates and dues brought in £2,204,990; rents of property, £293,701; dock traffic department, Mersey cattle wharf, floating cranes, coaling appliances at Liverpool and Birkenhead, etc., £273,916 during the year. Interest alone absorbed nearly £1,500,000. The expenditure of the Engineer's Department for the year was £458,511; Harbour Master's Department, £102,244; dock traffic department, Mersey cattle wharf, floating cranes, coaling appliances, etc., £207,347; police expenses and general charges, £373,000. Rates and taxes amounted to £88,333.

Expenditure on account of Conservancy is heavy, borrowing powers having been exercised to the amount of about £1,330,000. Surveying, lightships, buoys and landmarks, salvage plant, lifeboats, lighthouses and telegraph stations, steam tenders, removal of wrecks and official charges for a year amount to something like £75,000, whilst dredging the bar costs over £59,000. The statement of the pilot boat account reveals a total of £28,184.

General repairs and maintenance by the Engineer's department entail a big expenditure on both sides of the river. Here are some details of last year's work and its cost:—Docks, basins, graving docks, gates, bridges, sheds, streets, electric lighting, gas and water service, etc.—Liverpool £120,520, Birkenhead £41,603; landing stages and approaches—Liverpool £10,966, Birkenhead £2,597; buildings, offices, yards, petroleum depots, etc., let on rent, police stations, customs depots, etc.—Liverpool £4,902, Birkenhead £1,491; dockyards, workshops, engines and machinery, tools, motor vehicles, etc.—Liverpool £28,229, Birkenhead £6,962; dredging in river adjacent to dock entrances, etc.—Liverpool £47,497, Birkenhead £689; damages done to dock works—Liverpool £1,495, Birkenhead £510; dredging, sluicing, etc.—Liverpool £56,148, Birkenhead £5,217; hydraulic power—Liverpool £62,111, Birkenhead £17,689; sundry works—Liverpool £598, Birkenhead £1,168.

Below is stated the income and expenditure of important sections of Dock Board activity:—dock traffic department—income £66,648, expenditure £59,264; Mersey cattle wharf—income £56,392, expenditure £55,705; floating cranes and cranes on quays, etc., at Liverpool and Birkenhead—income £18,992, expenditure £22,044; coaling appliances at Liverpool and Birkenhead—income £44,762, expenditure £32,303; weighing materials—income £12,133, expenditure £6,578; railway at Birkenhead and Seacombe—income £1,188, expenditure £9,154; dock line of railway—income £1,560, expenditure £7,082; surveyors of cargoes department—income £1,182, expenditure £1,444; chain and anchor testing works, Birkenhead—income £3,799, expenditure £3,667.

Each of the Board's warehouses, of which there are twelve yields a substantial surplus. They are situated at Albert Dock, Stanley Dock, Wapping, Love Lane, Waterloo, Brocklebank, Wallasey, Birkenhead and Morpeth, and there are separate establishments for wool, grain and another for composite traffic. The surplus of income over expenditure for the year under review, after making allowance for local rates, amounted to £122,148.

News from all Quarters

South Africa

The technical experts of the Government are at present considering a gigantic scheme for developing the Table Bay Harbour at a cost of about £5,000,000. If adopted, the scheme would make the Port of Cape Town fully equipped for all emergencies for many years to come, and the enormous area of water enclosed would provide one of the finest seaplane bases in the world.

The scheme, full details of which are not yet available, provides for a 4,000-ft. wharf, which would be able to accommodate five or six 20,000-ton vessels; a new fishery harbour, a dry dock, and special oil berths. Hundreds of acres of land at the foot of Adderley Street—the main street of Cape Town—would be reclaimed. The sale of this land, it is considered, would more than repay the cost of the whole scheme. Adderley Street itself would be extended and would lead right on to the new wharf. It is stated that the scheme has immense possibilities, and that if it were carried out it would raise Table Bay Harbour to the first place in the Southern Hemisphere.

Reference to the attitude of the Union Government towards the Nijhoff Report was made by Senator C. F. Clarkson, when he opened the 37th annual congress of the South African Association of Chambers of Commerce at Port Elizabeth recently. Senator Clarkson said that the Government was anxious to have commerce views on the reports and suggestions made in connection with the general administration of the Union's harbours. "As regards Part I. of the Nijhoff Report, Mr. Pirow has already indicated to the Chamber of Commerce of Cape Town that he is busy with a long-distance scheme which for many years to come will give Cape Town adequate additional all-weather deep-water berthage. In deference to the wishes of the Cape Town Chamber of Commerce consideration of this long-distance scheme is being expedited so that it may be ready by the time Parliament meets.

"The position at Durban is that the report of the commission confirms the Administration's policy with regard to harbour development at that port, namely, that the development contemplated by the Administration should be proceeded with when trade recovery and increased traffic at the port justify it. The only difference of importance between the commission's proposals and those of the Administration is in the order of priority of the works contemplated. The commission and the department officers are at one in the opinion that additional deep-water berths at Durban Harbour should be provided without delay. In this connection the Durban Harbour Advisory Board will be consulted in the near future, and provision will be made in the capital and betterment estimates for 1936-37 for certain work to be carried out."

U.S.A.

Attention was drawn in our July issue to a growing tendency of sea-going traffic to shift from the harbour of New York to other ports, mostly further to the south. This is borne out by the figures which have just been published, giving the income from Customs dues of the various Customs districts. The total income from these sources showed in the 1934-35 fiscal year an increase of 10.2 per cent. to \$347,000,000. The income of New York, however, increased by only 2.7 per cent., whilst that of Massachusetts, which means practically the harbour of Boston, showed an actual decrease of 18.1 per cent. Another north-eastern Customs district, Rhode Island, also showed a decline of 13.6 per cent. On the other hand, the figures show, as had been anticipated, a considerable increase in the traffic of the ports of the southern and south-eastern districts and of the Pacific Coast. Thus, the income of New Orleans increased by 87.6 per cent., and that of Galveston by 80 per cent., owing chiefly to the increased imports from Latin America. Improved imports from Japan and the Far East resulted in large increases of the traffic of San Francisco and the Oregon harbours.

U.S.S.R.

It is officially claimed that rapid progress is being made with a plan for the construction of a canal from Moscow to the Volga, which will make the development of the capital as a harbour for sea-going vessels a practical proposition. When the work is completed in 1937, Moscow will be able to receive cargo-laden ships from the Caspian and Baltic seas by what will be the largest river canal in the world. It is stated that the construction of the canal is proceeding over a building line of 80 miles, that an army of 190,000 workers are being employed on it, and that the scheduled programme is being over-fulfilled from month to month. In addition to ten locks, the canal is to have three concrete dams, nine earthen dams, nine dykes and as many bridges, two tunnels and eight hydro-electric stations.

Another plan which will affect sea-going traffic is the reconstruction of the old Marinski canal system which connects the Volga with the Baltic Sea. This has just been approved by the Council of People's Commissars, and is to be put in hand in the near future. After the reconstruction, it is claimed, the system will be able to handle 24,000,000 tons of freight a year in one direction instead of the 2,000,000 tons handled at present.

Poland

After reaching in August the considerable height of 769,000 tons, the goods turnover of the harbour of Gdingen commenced to show a remarkable decline in September, falling by 121,000 tons to 648,000 tons. This figure was indeed lower by 12,000 tons than that for the corresponding month of 1934. The goods turnover for the first nine months of 1935 amounted to 5,600,000 tons, as compared with the 5,300,000 tons for the first nine months of 1934. It is to be noted that over the above periods the export turnover has for the first time for years shown a larger increase than the import turnover, rising by 6.4 per cent., as compared with the 4.6 per cent. of the import turnover figures. During the month of September the number of vessels entering and clearing in the harbour of Gdingen did not decrease at such an alarming rate as the goods turnover, but fell by only 10,000 n.r.t. to 410,000 n.r.t.

The official Polish Press recently published a plan for improving the facilities of the harbour of Gdingen, which would make it capable of unloading a minimum of 500,000 tons of ore per year. To do this, six cranes would have to be constructed on the Gdingen Ore Quay. Since then, a meeting of the Gdingen Chamber of Commerce has been held, at which a resolution was passed urging upon the Government the need for haste in its plans for the extension of the harbour. The resolution states that "in its present stage of construction and equipment the harbour of Gdingen, owing to the lack of adequate space and the necessary number of storehouses, is unable to increase its turnover adequately in a large number of goods. Our economic development is being hampered by the lengthy postponement of the extension works on the banks of the industrial canal, with the result that the export of bulk goods cannot be increased."

Red Pier, Douglas.

Rapid progress has been made with the Red Pier Extension, Douglas, I.O.M., and the opening ceremony will probably take place in the early part of the 1936 season.

The making of blocks at the Battery Pier yard of the Harbour Commissioners is now completed. These blocks have been made of mass concrete, and most of them weighed 15 tons each, with dimensions of 11 ft. by 5 ft. 6 ins. by 4 ft. A total of 3,500 blocks has been made, and the Harbour Board's tender, the Sirdar, has brought all these across from the Battery Pier to the Red Pier, where they were placed in position. The total load of concrete transported has been 50,000 tons. The coming winter's activities will be the last active work on the pier, and will consist for the most part of laying of electric and water services, the erection of light standards, railings and bollards, etc.; the forming of decking and steps, the construction of the pierhead building, and general finishing off.

The pierhead building will be 40 ft. long by 20 ft. wide, and will be provided with accommodation similar to that at the Victoria Pier, though the design of the building will be entirely different in character, and in keeping with the general scheme. It will be of solid masonry construction with a bridge across the width at the eastern end, and an octagonal-shaped tower facing the sea, for look-out purposes, 15 ft. above the deck. It will be a modern style concrete building, with quarters for the harbourmaster's office, pier police, ropemen, etc.

There is still several months' work to be done in connection with the viaduct, and an extra 20 men will be employed on the scheme this winter, starting in November.

Mr. J. A. Winterbottom, senior assistant engineer to the Harbour Commissioners, is the engineer in charge of the work this coming winter, under Mr. J. C. Brown, who has taken up his new duties as chief engineer.

The total cost of the scheme is about £250,000.

The Manchester Ship Canal.

The traffic returns for the month of September, 1935, for the Manchester Ship Canal amounted to £85,652, and this was a decrease of £4,400, as compared with the total of £90,052 for September, 1934. The traffic returns for the first nine months of 1935 show an increase of £10,943 over those for 1934, the figures being £893,410 for 1935, as against £882,467 for the corresponding period of 1934.

North-East Coast Notes

BLYTH has recently been accumulating coal shipping records, and that established on October 8th will be difficult to surpass. On that date the London and North-Eastern Railway Company's staiths shipped 27,152 tons, and the Cowpen staiths 4,761 tons, a total of 31,913 tons. The Ashington Collieries dispatched the large quantity of 16,973 tons. These figures were a record for the London and North-Eastern Railway staiths as well as for the port. Only days before—actually on September 27th—a record was set up when 29,300 tons were shipped. At the London and North-Eastern Railway Company's staiths the quantity cleared was 24,676 tons, and at the Cowpen staiths 4,624 tons. The nearest figure in the past was about 26,000 tons. These recent figures show clearly the real capabilities of the port.

Local Trade Figures.

At the September meeting of the River Tyne Improvement Commission the coal and coke shipments for the first eight months of the year were reported as down nearly 500,000 tons, and much of the fall was ascribed to the loss of trade with Italy. The figures were: August 31st, 1935, 8,922,258 tons; August 31st, 1934, 9,335,720 tons; August 31st, 1933, 13,556,532 tons. Better figures were produced, however, regarding laid-up tonnage in the river. For the first time for some years the net registered tonnage laid up was less than 100,000. At the end of August there were 54 vessels laid up, but at the date of the meeting there were 52 of 99,000 tons.

At the meeting of the Blyth Harbour Commission in the middle of September details of the coal shipments were given as follows:—For the eight months ended August 31st, 1935, 4,111,779 tons; 1934, 4,192,541 tons; 1929, 3,679,043 tons. The totals show a decrease of 2 per cent. on 1934, and an increase of 12 per cent. on 1929. In submitting these figures the Chairman said the prospects to the end of the year were fairly good.

The coal and coke shipments from the Wear for the eight months ended August 31st, 1935, were 2,518,559 tons, and for the same period of 1934 were 2,649,486 tons, a decrease of 130,527.

Inquiry into Tyne Wharves.

The first public inquiry ever held on Tyneside regarding sufferance wharves was opened by Mr. E. W. Thew, Collector to the Port of London, at the latter end of September, and continued several days. Mr. Thew explained that the object of the inquiry was to hear representations from traders or other interested parties as to what new wharves, if any, on the Tyne should be granted privileges, and also in the case of wharves on the river so privileged which were not in fact used for foreign trade, whether there were any reasons why the privileges should not be withdrawn.

A vast amount of evidence was placed before the Commission in the course of which there emerged several notable points, especially with reference to extensions in progress or contemplation. The high port charges of Newcastle, as compared with Hull, were discussed when Messrs. J. Baxter and Co. (Newcastle) Ltd., made application for sufferance privileges at the Newcastle wharf. Supporting the application, Mr. E. C. Pringle, representing the Northern Produce Exchange, said that shippers found it cheaper to ship to Hull and transport goods to Darlington and Stockton at additional cost rather than discharge at Newcastle. By shipping to Hull there was a saving in total port charges of 3d. per package in the case of food stuffs, and despite the additional distance to Darlington and Stockton and the consequent increased transport costs, there was an overall saving of about 8s. per ton by shipping to Hull instead of Newcastle.

When an application for sufferance privileges was made by the Jubilee Wharf of the Gateshead Wharfage Co., Mr. Henry Armstrong, managing director of the Tyne-Tees Shipping Co., Ltd., submitted evidence in respect of the Company's Hillgate Quay, Gateshead. The quay was 735 ft. in length with berthage for three steamers, and was used by the Hamburg and Amsterdam steamers and a small coaster. Apart from the movements of these vessels, there were available one berth on Mondays, two on Tuesdays, and three usually available for the rest of the week. The Hillgate Quay was equipped with modern warehouse accommodation, and the Company was prepared to deal with any vessels which might require the use of the quay. In spite of the facilities there had been practically no demand for berthage accommodation, and so far as Gateshead was concerned he was convinced there was no further need for the granting of sufferance privileges.

Developments in Progress.

In his evidence regarding the Mill Dam Quay for which the South Shields Corporation held legal rights, the Town Clerk,

Mr. H. Ayrey, said that consideration was being given to a proposal to transfer these rights from Mill Dam to the new quay. When completed the latter would extend from the Lawe to the direct ferry landing and have a frontage of 2,500 ft.

The Secretary of Palmer's Hebburn Co., Ltd., now a subsidiary of Vickers-Armstrong Ltd., said extensions were being carried out at the Company's Hebburn jetty in the hope of future expansion of trade. The old wharf, 250 ft. in length, was being extended to 700 ft., and would be used for the import of raw materials and the export of manufactured products. The old wharf was a recognised unapproved place, and the continuance of this existing privilege extended to the new wharf was essential to the firm's business.

At a later session of the inquiry evidence was submitted by the North of England Shipowners' Association, and many aspects of the shipping trade at Newcastle were discussed. It was stated that the Newcastle Corporation was taking steps to provide 1,200 sq. ft. additional shed accommodation at wharves Nos. 25 and 26 at Newcastle Quayside. In an official statement the Association pointed out that their members represented one million tons of shipping. The members considered that the granting of privileges should not be withheld for the discharging of ships at any buoys in the river or at any suitable place considered satisfactory by the owner.

Position of Newcastle Quay.

Mr. J. Atkinson, Deputy Town Clerk of Newcastle, asked for protection for the Newcastle Corporation Quays. He said Newcastle had invested on its quays £960,800. The total loss on the quays since 1905 had amounted to £266,083. In 1928, the peak year, the deficiency had been £7,621; in 1933, £13,470; in 1934, £16,050, and for the year ended March 31st, 1935, £18,600, equivalent to 1.98d. in the £1 rate. Since 1928 the import trade had suffered a big reduction due to tariffs, and the export and import trade in total showed a big reduction. "If further privileges are granted," Mr. Atkinson said, "it will result in wasteful competition, and I submit that the Newcastle Corporation is entitled to some protection because we provide all the necessary facilities at Newcastle."

Mr. Albert Blacklock, secretary of the Tyne Commission, submitted the formal application of the Commission to continue the sufferance privileges held by them in respect of certain docks and quays. Mr. Blacklock described the work of the Commission since its inception, and said one striking point was the fact that the Commissioners had deepened the main entrance from 26 ft. to 30 ft. The Commissioners were now carrying out dredging work to deepen the main channel up to Jarrow Quay corner from 25 ft. at low water to 30 ft. for the convenience of vessels discharging at the Jarrow oil depot. As the port authority, the Commissioners would view with grave concern any step which would, or might have an impeding effect on the free flow of traffic through the port, its expansion, or the placing of additional burdens upon its trade.

When the London and North-Eastern Railway Co. applied for a continuance of its privileges Mr. John E. Kitching, district goods manager, described the work of Tyne Dock, and said contemplated extensions of the Western Quay, etc., would cost £180,000.

Bombay Port Trust

At a meeting of the Trustees of the Port of Bombay held on 1st October, 1935, the following were the main items of business disposed of:—

The Board accepted the tender of the Bombay Burmah Trading Corporation for the supply of 5,000 cu. ft. of teak crossing timber for renewals on the Port Trust Railway during 1935-36.

The following expenditure estimates were approved:—

- Rs. 8,000 for renewing hydraulic pressure pipes in Victoria Dock;
- Rs. 19,800 for roofing passages in the Ryan Grain Market;
- Rs. 5,280 for roofing bolts and fittings in the under-water portion of the Pir Pao Pier with stainless steel fittings.

A reduction in the rate of B.P.T. Railway through freight on rice from the docks to Rs. 1-8-0 for a minimum of 200 maunds and on a proportionate basis for every additional 100 maunds was sanctioned.

Amendments of the Docks and Bunders Scales of Rates were approved, subject to the sanction of Government, providing for a reduction of the wharfage from Rs. 3-12-0 per ton to Rs. 0-13-0 per ton on crude or unprocessed Indian Barytes Ore

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Humber Conservancy Commissioners

Foreshore Accounts Settled.

The difference between the Board of Trade and the Humber Conservancy Commissioners respecting the foreshore accounts has been amicably settled. The accounts rendered by the Conservancy Commissioners and their predecessors since 1868 were criticised by the Board of Trade who contended that three separate accounts should have been kept instead of pooling in a common account the receipts and expenditure in regard to the foreshore demised by the Board of Trade to the Humber Conservancy Commissioners by the leases of 1869 and 1872, and also in regard to Read's Island in the Humber. An explanation of the reasons why the pooling system was from the start adopted was sent to the Board of Trade with an expression of the hope that an equitable financial adjustment might be possible without endeavouring to separate the accounts which over so long a period would entail enormous work beyond the present capacity of the Commissioner's staff. In a letter read at the most recent meeting of the Humber Conservancy Commissioners the Board of Trade stated that they had reconsidered the matter following an inspection of the accounts by one of their representatives, and they suggested the payment of £1,816 7s. 7d. in respect of the years 1908 to 1933 in settlement of the Board's claim in respect of an Ouse and Trent lease of Read's Island. The Board waived a claim for compensation in respect of sums expended by the Conservancy Commissioners with consent upon works at Broomfleet Island up to the year 1933. The Chairman (Mr. J. H. Fisher, J.P.) moved a resolution expressing the willingness of the Conservancy Commissioners to dispose of the matter on the basis of the letter received from the Board of Trade, and this was adopted.

In another communication the Board of Trade informed the Conservancy Commissioners that they were unable to agree to the continuance of the issue of licences for the removal of gravel from the shore at Spurn Point anywhere landward of the low-water mark, but offered no objection to licences being granted for the removal of gravel from any other area at Spurn or to the issue of licences for the removal of sand from the Humber in the vicinity of Paull Sand. The trade in general is now negligible, and the Commissioners decided to discontinue the issue of licences as desired by the Board of Trade. Sanction was given by the Commissioners to a proposal by the Humber Pilots Steam Cutter Company to place an order for a new steel motor launch at a cost of £2,000. The London and North-Eastern Railway wrote asking that the pilotage charges of £17 11s. 10d. in respect of three river excursions should be reduced, but it was decided, on the recommendation of the Pilotage Committee, that the Board could not depart from the charges laid down in the schedule.

The Port of Copenhagen.

The number of ships which entered the Port of Copenhagen during September, 1935, was as follows:—From inland ports 1,242 steam and motor ships arrived of 174,166 n.r.t., and 24 sailing vessels arrived of 5,369 n.r.t. Shipping arriving from foreign ports amounted to 811 steam and motor ships of 438,568 n.r.t., and 11 sailing vessels of 3,078 n.r.t. The total of steam and motor ships and sailing vessels arriving from both inland and foreign ports for September amounted to 2,088 vessels of 621,181 n.r.t.

Russell Mobile Cranes.

Messrs George Russell & Co., Ltd., of Alpha Works, Motherwell, Scotland, have, in the design of their Mobile cranes, aimed at securing complete reliability, longevity, and ease of control under the most adverse conditions. The more vulnerable parts are totally enclosed, hard-wearing metals only have been used, and the pressure system of lubrication has been adopted.

There are four gear-boxes on the mobile crane, one each for derricking, hoisting, travelling and slewing. Each box contains a set of friction clutches and spiral bevel gears, giving forward, neutral and reverse rotation. The line shaft passing through these boxes and also the spiral bevels run freely on ball bearings. These friction clutches are totally enclosed and efficiently cooled, and are therefore operating under ideal conditions, and the spirally-cut gears ensure increasingly smooth and noiseless running throughout the life of the crane.

Other parts which are enclosed and run in oil include the driving chain from the engine to the line shaft, the slewing worm gear, and the differential drive to the rear wheels.

The 2-ton mobile crane can be fitted with petrol or Diesel engine and has the following full load speeds: hoisting—30 ft. per minute; derricking—maximum to minimum radius in 45 seconds; slewing—3 r.p.m.; travelling (2 speeds)—75 ft. and 200 ft. per minute. The crane can lift 2 tons at 12 ft. radius and 1½ tons at 18 ft. 6 in. radius. Cranes of similar design can be supplied up to 6 tons lifting capacity.

The Port of Amsterdam

Statistics for the Port of Amsterdam in regard to number of vessels and tonnage and to goods traffic arrived and sailed, as compared with the corresponding figures of last year, are as follows:—

SEAGOING VESSELS AND TONNAGE.

	ARRIVALS				SAILINGS			
	No.	Per Cent.	N.R.T.	Per Cent.	No.	Per Cent.	N.R.T.	Per Cent.
Sept. 1934	269		373,252		272		377,511	
" 1935	236		321,437		223		297,450	
	-33	-12.27	-51,815	-13.88	-49	-18.01	-80,061	-21.21
Aug. 1935	245		337,466		263		382,596	
Sept. 1935	236		321,437		223		297,450	
	-9	-3.67	-16,029	-4.75	-40	-15.21	-85,146	-22.25
Jan.-Sept. '34	2,444		3,494,691		2,462		3,521,874	
" '35	2,153		3,134,848		2,165		3,175,591	
	-291	-11.91	-359,843	-10.30	-297	-12.06	-346,343	-9.83

SEAGOING GOODS TRAFFIC. (In Tons of 1000 Kilos*).

	1	2	3	4	5
	Import	Transit incl. in col. 1	Export	Transit incl. in col. 3	Total col. 1 & 3
Aug. 1934	333,033	63,136	164,143	65,109	467,182
" 1935	256,713	58,131	171,098	69,775	427,811
	-46,320	-5,005	+6,955	+4,666	-39,371
	-15.29%	-7.93%	+4.24%	+7.17%	-8.43%
July 1935	226,139	52,157	128,244	65,370	354,383
Aug. 1935	256,713	58,131	171,098	69,775	427,811
	+30,574	+5,974	+42,854	+4,405	+73,428
	+13.52%	+11.45%	+33.42%	+6.74%	+20.72%
Jan.-Aug. 1934	2,446,672	451,050	1,085,770	450,091	3,532,442
" 1935	2,107,116	468,440	1,137,455	499,182	3,244,571
	-339,556	+17,390	+51,685	+49,091	-287,871
	-13.88%	+3.86%	+4.76%	+10.91%	-8.15%

* These figures have been taken from the monthly statistics of the Central Bureau, The Hague, Holland.

Classified according to flag the number of vessels which entered the Port of Amsterdam during September, 1935, was: Netherlands, 117; Great Britain, 59; German, 17; Swedish, 17; Norwegian, 12; Danish, 3; French, 1; Greek, 2; Polish, 1; Belgian, 1; Portuguese, 1; Russian, 5.

Vessels laid-up at Amsterdam:—1st September, 1935—15 vessels, measuring 79,353 tons gross; 1st October, 1934—18 vessels, measuring 108,156 tons gross; 1st October, 1935—10 vessels, measuring 58,708 tons gross.

The New P. and O. Liner "Strathmore."

In the October issue of *The Dock and Harbour Authority* there appeared on page 334 an article on the new P. & O. liner "Strathmore," but we omitted to mention that the builders of this vessel were Messrs. Vickers-Armstrongs Ltd.

The Port of Rotterdam.

The Chamber of Commerce and Industry of Rotterdam has recently issued the statistics concerning the movement of seagoing ships in the New Waterway, and which are as follows: During September, 1935, 937 ships with a net registered tonnage of 1,189,129 entered the Port of Rotterdam, as compared with 923 ships of 1,504,687 n.r.t. during September, 1934. The number of ships entering for the small ports in the environs were 167 of 335,356 n.r.t., as compared with 180 ships of 313,470 n.r.t. in September, 1934.

For the nine months ending September, 1935, 8,169 ships of 13,239,687 n.r.t. entered the Port of Rotterdam, as against 8,491 ships of 13,382,095 n.r.t. for the corresponding period of 1934. The number of ships entering for the small ports in the environs of Rotterdam during the first nine months of 1935 amounted to 1,775 ships of 3,558,151 n.r.t., as compared with 1,926 ships of 3,405,257 n.r.t. for the corresponding period of 1934.

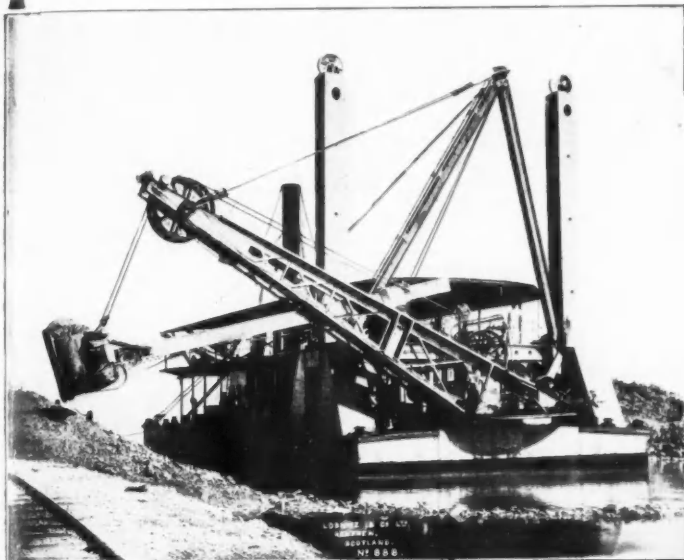
After deducting the number of ships counted more than once in the different ports, the number of entrances during the month of September, 1935, amounted to 1,053 ships of 1,677,382 n.r.t., as compared with 1,077 ships of 1,760,722 n.r.t. in September, 1934. For the first nine months of 1935 the total entrances were 9,427 ships of 15,398,184 n.r.t., as compared with 9,907 ships of 15,669,603 n.r.t. for the corresponding period of 1934. These figures are for the whole region of the Port of Rotterdam with its environs, comprising the delta formed by the mouths of the Rivers Rhine and Meuse.

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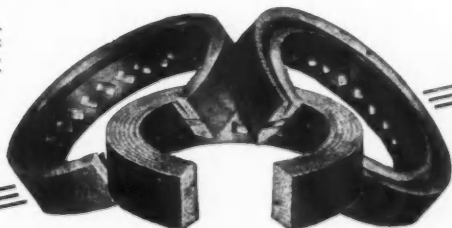
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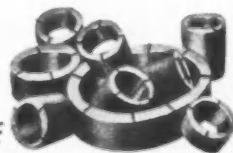
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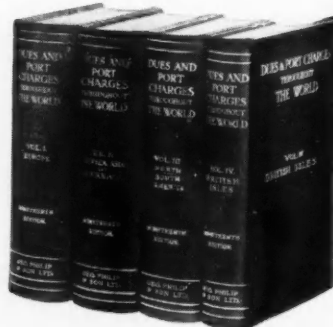


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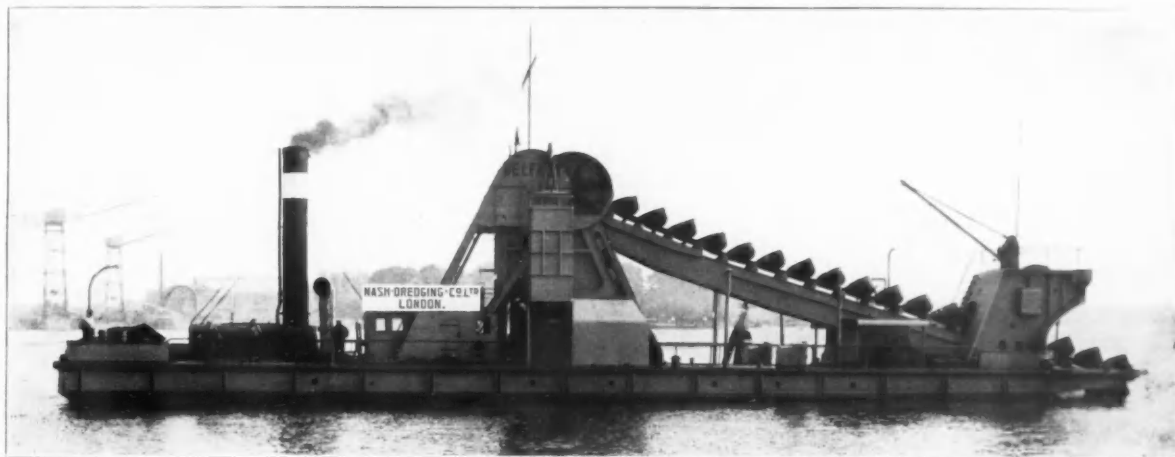
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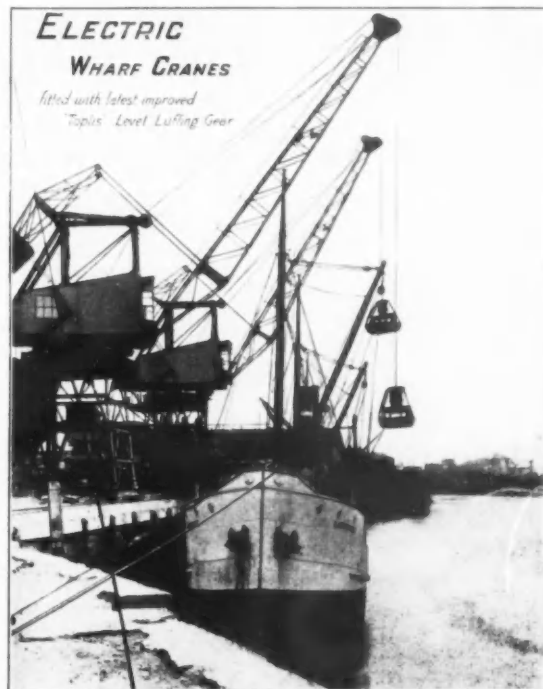
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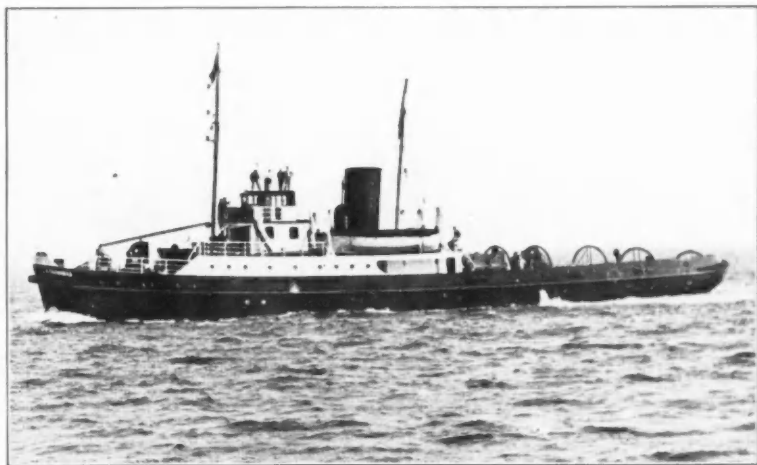


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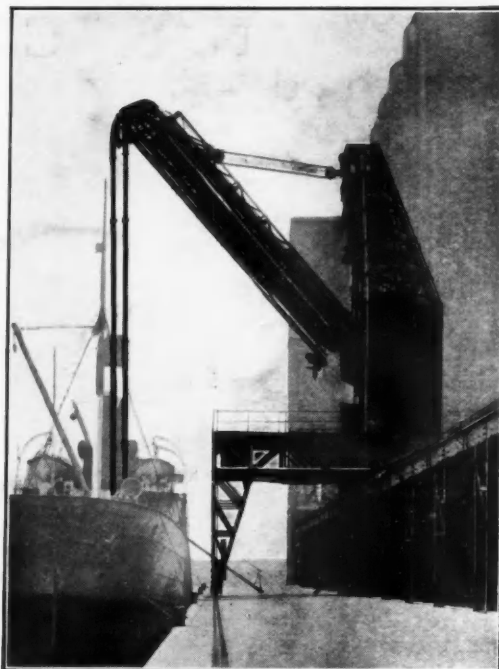
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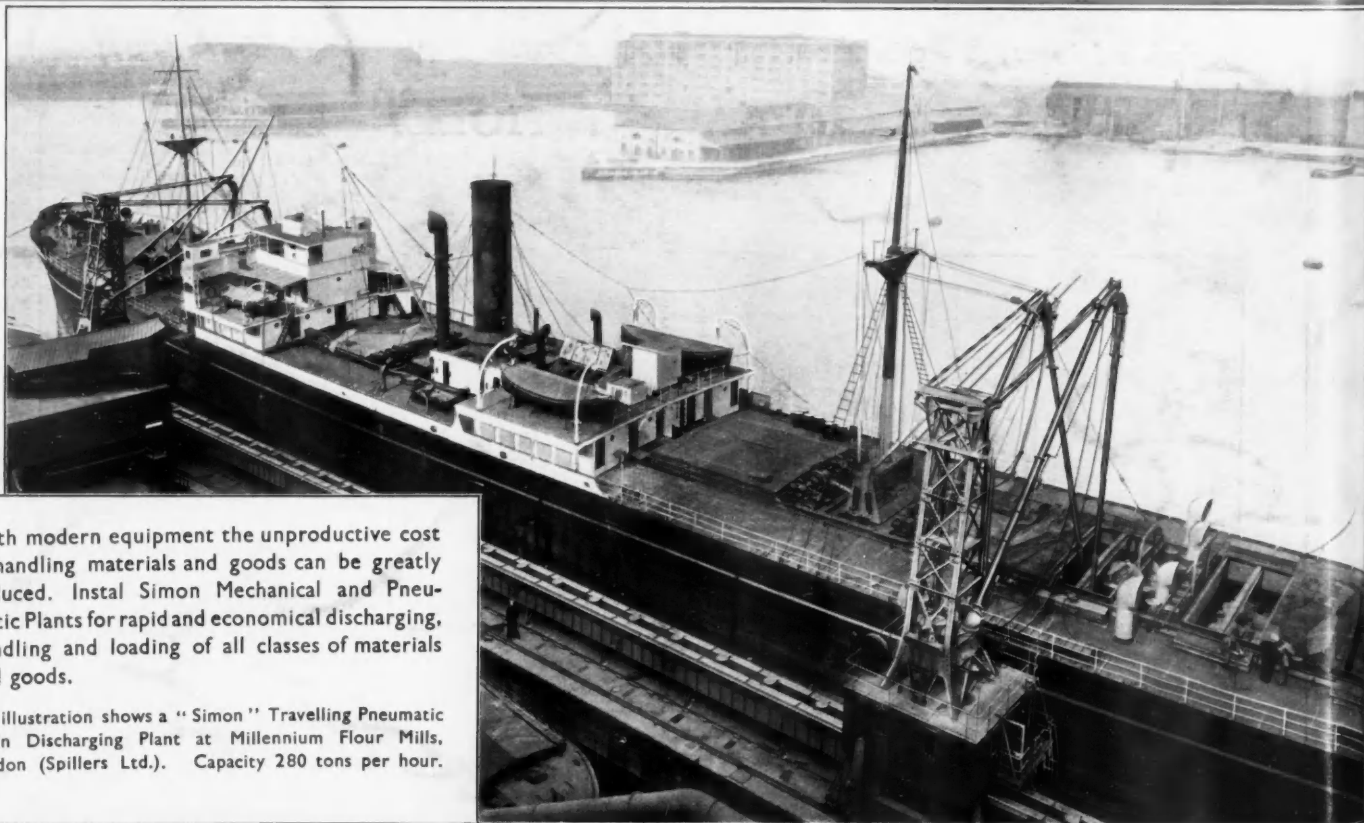
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